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Checking the Wage-Cost Spiral

THE proposal made by the courts of inquiry set up to consider the wage dispute in the engineering and shipbuilding industries, of a joint body to keep wages and other matters under periodic review, and also to examine the wages structure is the result of the alarm felt by the courts at the dire effects of progress of the wage-cost spiral. The terms of reference and composition of the suggested body have not been defined. Reactions so far among the unions seem to have been not unfavourable; the Transport & General Workers' Union already has recognised the seriousness of foreign competition as it effects British engineering exports. What the proposed body can effect, however, without acceptance by the unions either of some form of wages restraint—or at least of the principle that wages restraint may in some circumstances be necessary—or of further measures to increase efficiency, such as are being considered for the railways, is problematical; and to be of practical use its findings would have to have considerable weight, whilst its impartiality must be unquestioned. It could help in matters such as study of differentials, though in this respect there are probably fewer anomalies than in railway wages. The Minister of Labour, Sir Walter Monckton, is considering establishing an impartial body to advise on the broad implications of wage claims generally, and has united the nationalised industries, the British Employers' Confederation, and the Trades Union Congress to consider this and also the introduction of voluntary arbitration for settling disputes into the constitutional machinery of the engineering and other industries which at present are without it. Here the engineering industry presents a complete contrast with the railways, where there is a comprehensive negotiating machinery, with the great majority of the employees embraced by three unions peculiar to the railways, and the railway wages structure already is under discussion under the wages agreement reached at the turn of the year between the British Transport Commission and the railway unions. What is really wanted, however, is a realisation amongst workers in the railway and engineering industries, and the will to act on it, of the importance of keeping down prices, more especially of engineering exports, by increased efficiency and abstention from wage demands, both in their production and transport.

Institution of Locomotive Engineers' Luncheon

THE principal guest at the Institution of Locomotive Engineers' annual luncheon last Friday was Sir Brian Robertson, Chairman of the British Transport Commission. He told his audience of over 700—a record figure for this function—that the Commission appreciated the importance of the British locomotive building industry in the export market and that the Commission would show its appreciation " when it could," but he gave no hint of the form this was likely to take. The President of the Institution, Mr. R. C. Bond, who is Chief Officer (Mechanical Engineering) of the Commission, stressed the importance of not sacrificing, in the changes to be made under the Transport Act of 1953, the benefits derived by British Railways since nationalisation in unification of practice in the sphere of mechanical engineering. He pointed out that the title of the Institution did not properly show the wide range of its activities; these were illustrated in the two immediate Past Presidents, a consulting and an electrical engineer, and in the President-elect for the coming year, Mr. A. Campbell, the Chief Mechanical Engineer of the Crown Agents for the Colonies.

R.O.D. Officers' Dinner

BEFORE the war the annual dinner of officers of the Railway Operating Division, which was formed in France during the war of 1914-18 was a popular and well-attended assembly. Necessarily it fell into abeyance in 1939 and although it has been revived in recent years, largely as a result of the indefatigable efforts of Captain F. L. Castle, it has been a smaller gathering, though not the less enjoyable. A list of those present at the dinner on March 3 last, which was held at the Transportation Club, with Sir Michael Barrington-Ward in the chair, is given in our Personal pages. More would have been present but for the fact that despite some care in selecting a date which it was hoped would not clash with other engagements, several who had intended to attend had to fall out. The unanimous wish of those present was that the reunion should be held again next year. In the meantime efforts are to be made to get in touch with more of the officers of the groups so that they may be advised in good time of the arrangements to be made.

Cheap Fares

THE question often asked by members of the public and by many railwaymen, why all fares cannot be reduced, as it costs no more to run full trains than empty, and equipment could be used to the full and receipts increased, is clearly and concisely answered in the March issue of *British Railways Magazine* by "The Man on the Line." Writing under the title "Cheap Fares," he explains that there must be a good chance of the cheap fare gaining more net revenue; a universal fare reduction would engender crowds at times when trains are already filled by passengers paying ordinary fares. The aim must be to attract new customers who would not otherwise travel at

all, and at times when unused capacity is available. The principles present no difficulty. The trains which are running should be filled to capacity, and then, if possible, special trains should be put on and filled at fares which will justify running costs. In the end, public reaction must be the deciding factor. If enough people will travel the fare for any particular journey can be reduced to very competitive rates. If the cheap fare loses money through lack of support the effect is to subsidise the excursionist from ordinary fares.

North British Locomotive Company Apprentices

MUCH attention is now being paid by railways and locomotive building firms to the efficient training of youths as mechanical engineering apprentices. The British Railways training scheme was described in our issue of January 8. A brochure outlining the training schemes offered by the North British Locomotive Co. Ltd. is the subject of a brief notice elsewhere in this issue. Under them, engineering apprentices must have achieved the General Certificate of Education or the Scottish Leaving Certificate before admission, and their course includes 40 months in shops and 10 in the drawing office; they must also attend evening technical classes. Their course may qualify them as draughtsmen, foremen, production engineers, ratefixers, or assistant managers, and their technical classes lead up to one of the recognised national certificates in engineering or an intermediate or final examination of the City & Guilds of London Institute. An outstanding engineering apprentice may be promoted to take the university apprenticeship course, and be awarded a university scholarship. The university apprenticeship course provides graduates with the practical experience required for Associate Membership of the Institution of Mechanical Engineers, and fits them for eventual appointment to high executive positions. They also attend technical courses qualifying as apprenticeship time up to a maximum of two years, of the intensive course.

Indonesian Rolling Stock

REHABILITATION of the 3-ft. 6-in. gauge Indonesian State Railways has required much new motive power and passenger and freight rolling stock, nearly all of which has come from European manufacturers, though some diesel-electric locomotives are now in course of delivery from America. Before the war the Javanese State Railways were noted for the speed of main-line passenger trains, and among the locomotives were 2-6-6-0 Mallet tanks, and 2-12-2T engines; and at different times the Swiss Locomotive Works built 53-ton 4-6-2 locomotives, 74-ton 2-6-6-0 Mallet tender engines and 66-ton 4-6-4T engines. In post-war years simplicity combined with modern valve gear and boiler proportions have been the keynotes, as exemplified by the 100 Krupp-built 2-8-2 engines. Recent deliveries of passenger stock have been from Holland, Werkspoor and Beijnes participating, and third class coaches built at the postwar Beverwijk works of the latter company are described in this issue. Here again straightforward design and simplicity are found, and a high carrying capacity per unit of weight has been achieved, the empty weight of a coach being equivalent to 570 lb. a seat.

Bridge Reconstruction at Carlisle, L.M.R.

BY the courtesy of the Civil Engineer, London Midland Region, British Railways, we have been able to inspect the drawings of Bridge No. 244 at Carlisle, described in our February 5 issue. We can thus supplement the information contained in that article with a few extra details. The first point to be noted is that the construction depth of this bridge is only 1 ft. 7 in. This was made possible by welding 109-lb. flat-bottom rails to 1 ft. 6 in. × 10 in. × ½ in. flat soleplates, each resting on a cushion of Plasoleum with a minimum thickness of ¼ in., and secured by four bolts passing through the 12 in. pre-cast deck slabs. The slabs are not all of the same size and each has two rows of either five, six, or seven Freyssinet 12-wire prestressing cables arranged in the usual manner and transversely to the tracks. There are also four longitudinal cables threaded through each row of slabs—one row under each track—and anchored at the ends of each span, to supply post-tensioning at site. The general principle governing the shear-plate connections between the corners of each slab and the girder stiffeners somewhat resembles the latest Western Region practice described in our issue of December 4 last, but the details differ considerably.

Unusual Features

THE three spans in the bridge discussed above are approximately 42 ft., 35 ft. and 40 ft. in length, measured between centres of bearings, and are on skews of about 40 deg., 27 deg., and 38 deg. respectively. Thus the abnormally wide piers between them are differently tapered in plan, and their ends vary in width from 14 ft. to 32 ft. measured parallel to the track centre lines. For reasons explained in the article of February 5, the prestressed concrete slab deck runs through from span to span over these piers. There, the ends of the slabs are supported by the existing side pier-walls and, in the case of the cellular northern pier, by a central wall parallel to the tracks. In the southern pier, however, a 10-ft. longitudinal arch takes the place of a central wall, but to carry the inner ends of the two rows of slabs, this arch had to be strengthened by placing reinforced concrete work over it. As well as complicating rebuilding, these features, coupled with the remarkably shallow construction depth, help to make this an unusual bridge. It may be noted that, in contrast to the practice of some of the other Regions, this entire work of reconstruction was carried out in the shops and at site by railway staff.

German Standard Sleeper

THE post-tensioned type of concrete sleeper now standardised and mass-produced on the German Federal Railways is understood to be giving complete satisfaction. Including elastic rail-fastenings, it is cheaper than a beech-wood sleeper and its fittings, and maintenance, even under heavy traffic, is said to be negligible; its expectation of life is 60 years. When all the main lines have been equipped with this type of sleeper and long-welded rails, the estimated annual saving is believed to be about £7,000,000. This sleeper has two ¾-in. tensioning rods with threaded anchor-plates at one end and nuts and about 2-in. dia. washers at the other. The nuts are tightened initially to give a 3-ton tension before the removal of each group of three sleepers from their common mould. Then, after a minimum period of four weeks, they are post-tensioned by a specially-designed device to 8 tons, and finally, after ten weeks similar tensioning gives an ultimate load of 13 tons on each rod, the end of which is then sealed up. The rails rest on rubber pads and are secured by special screw-spikes with double-spring-washers and clamping plates.

Southern Region Signalling Developments

SOME details of the developments which have taken place since the then Southern Railway applied, in 1926, four-aspect power signalling between Holborn and Elephant & Castle were ably described recently by Mr. W. Hardwick to the Southern Region Signal & Telecommunications Technical Society. That installation was followed by others, several of considerable size, and throughout those responsible adhered to the power locking frame, aiming at a uniform system capable of meeting all their requirements. This has not, however, as the lecturer stressed, stood in the way of the introduction of certain constructional and circuit improvements, as experience has shown them to be advisable. The junction indicator was first applied in its now generally accepted form when the resignalling between London and Hampton Court Junction was carried out in 1936 and is, of course, standard for new work or replacements. The detachable top relay also is now used. Aided by good diagrams, Mr. Hardwick ex-

plained the fundamental circuits used with running signals, junction indicators, route indicators, shunt signals, point locking protection, etc. Questions addressed to him brought out the value of the educational work being done by this society and those in other parts of the country.

Power Signalling at Strasbourg

THE re-signalling of Strasbourg Central Station, rebuilt in 1878-83 under the German administration of Alsace-Lorraine, was in hand before the last war and some reference to it, with illustrations, appeared in our issue for September 1, 1939. It was decided to adopt the well-known M.D.M. mechanical combinator route-lever frames already in use in Alsace at Lutterbach, and the equipment was well advanced by the date mentioned. By a modification to the original M.D.M. designs each lever was made to serve four routes, a considerable gain. Work on the 70-lever South Signalbox, almost ready to function, was stopped on the outbreak of war and the frame disassembled and sent, with other items, to safe storage. The Germans later insisted on a reinstatement and the box was complete again by 1944, but not put into service until 1946. The entire work was recently completed by the opening of the 100-lever (400 routes) North Box and addition of a fifth platform to the station. The original mechanical boxes contained frames of an old Bruchsal type, not manufactured for many years.

Testing of Mechanical Locking

THE importance of mechanical locking in the working of our manual and some of our power lever frames needs no emphasis. Specialised knowledge is needed to design and manufacture it. Various types of mechanism have been used and examples of many still are met with, originating in the days when numerous inventors were at work on interlocking problems and strove to avoid the patents held by others. Nevertheless the object of all types was essentially the same. When the locking in a frame has been constructed, however, it requires to be very carefully tested, so as to be perfectly sure that nothing is missing and that no opportunity exists for a false lever movement to occur. The various points involved were dealt with in a paper by Mr. H. G. E. Taylor, read before the Institution of Railway Signal Engineers at Derby on March 3, who showed that unless a very strict testing process was painstakingly followed, it was comparatively easy to obtain an erroneous impression that everything was right whereas in fact there was a flaw in the locking, which might go undiscovered for some time.

British Locomotive Deliveries to South Africa

ALLEGATIONS by Mr. P. O. Sauer, South African Minister of Transport, as reported in sections of the daily Press, of delay in the delivery of, and mechanical defects in, locomotives being supplied to the South African Railways may have created a misleading impression. The North British Locomotive Co. Ltd. and Henschel & Sohn, G.m.b.H., are sharing a large order for 4-8-4 class "25" locomotives, of both condensing and non-condensing design, described in our February 26 issue. All the 50 non-condensing locomotives—10 from North British and 40 from Henschel—have been delivered and are operating without trouble. The condensing equipment for the other locomotives was designed in Germany and all the condensing tenders so far delivered to South Africa have been of the order of 60 tenders being executed by Henschel; it would be surprising if no teething troubles had been experienced with equipment so unorthodox. North British, which is to supply 30 condensing tenders, is turning out 90 condensing engines, without tenders, at a rate of two a week and fully expects to complete this order by the promised date of September, 1954. The electric locomotives to which Mr. Sauer also referred are of the "4E" class and 1 – Co + Co – 1 wheel arrangement, with mechanical parts by North British and electrical equipment by the General Electric Co. Ltd., and it is understood that all 40 of them are now operating satisfactorily.

Parliament and Nationalised Transport

THE debate in the House of Commons last month on the report from the Select Committee on the accountability of nationalised industries to Parliament showed a good many Members to be in favour of a Select Committee to oversee the work of the nationalised industries. The matter is to be debated further, however, when the Government decides on the exact proposals to which it will ask Parliament to agree. As regards transport, the reason for so pronounced a feeling in favour of a supervisory organ of Parliament probably is a conscious or unconscious desire for something to replace the annual general meetings of the former railway companies, when shareholders had opportunities of voicing their criticisms and raising matters which they thought fit. Whether much was achieved by the criticisms and suggestions made by shareholders at the meetings is doubtful; but the fact of having to face shareholders even at comparatively rare intervals, and the publicity given to the proceedings at these meetings, may well have been a stimulus to managements in some cases, if only to ensure that good reasons were given for action taken or planned and clear explanations forthcoming.

In the case of nationalised transport undertakings for which the British Transport Commission is responsible to Parliament, there are already ways in which Parliament and the general public are and can be kept informed of what has been done, is being done, and planned. Once a year the House of Commons debates the annual report of the Commission and, apart from fundamental questions of transport policy such as the form of railway organisation to take place under the Transport Act of 1953, debates on railway and other transport matters are held on the adjournment and other occasions. Reference to the Parliamentary columns of this journal show that those occasions when the opportunity is taken in both Houses to raise all manner of questions, many of detail, and air views which often seem purely personal, are not few. Representatives of the Commission are in attendance at debates to supply detailed information if required. There is also the Parliamentary Question, a useful instrument not only for eliciting detailed information, but also for drawing attention to real or supposed shortcomings of management and to suggestions for improvement. Questions of detail which are of purely particular and restricted scope are rightly refused for tabling but are referred to the Commission for detailed reply to the Member concerned. In addition, the Chairman of the British Transport Commission on more than one occasion has met Members, or accompanied the Minister of Transport when meeting delegations to discuss some matter raised by them; and groups of Members of all parties have been accorded special facilities to visit railway and other installations.

With these ample opportunities of informing themselves and expressing their views on transport matters, it may seem hard to see what further facilities are needed for M.P.s to inquire into the working of nationalised transport. The Commission was set up by the Act of 1947 with certain definite responsibilities. Too detailed an inquiry or a series of petty inquiries into day-to-day working, by absorbing excessive attention and causing the Commission to "look over its shoulder" instead of carrying on confidently with its task of providing efficient service whilst paying its way, will detract from its efficiency.

The multiplicity of bodies already existing outside Parliament to control or to check on the activities of the Commission increases the possibility of overlapping if the responsibilities of the Parliamentary supervisory committee are not clearly defined. Railway rates and those of certain others of the Commission's undertakings are the sphere of the Transport Tribunal, whilst rate or fare questions on occasions may have to be referred by the Minister of Transport to the Cabinet. The comprehensive and elaborate machinery of conciliation in force with railway staff and labour questions, in which also the Government of the day may be involved through the Minister of Labour, clearly must not be impinged on. Users of nationalised transport are amply catered for in the series of consultative committees.

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With these three spheres outside its purview, because they are already embraced by specialist bodies, the Parliamentary committee must be careful not to interfere with other questions of management. Whatever form the body appointed by Parliament to oversee nationalised transport may take—if indeed Parliament eventually decides on such a body—it should be a small, all-party affair charged with broad policy. To obviate the danger of interference in matters of detail and of derogating from the responsibility to Parliament of the Minister of Transport and from that of the Commission to the Minister, the new body should confine its representations to, and demands for information from, the Minister, or the Commission as a body, or the Chairman of the Commission, and no approach should be permitted to the officers of the Commission.

Transport Users' Consultative Committees

THE report for the year 1953 of the Central Transport Consultative Committee for Great Britain, published last week as a White Paper, raises fundamental questions of the scope of the machinery for consultation between the managements and the users of nationalised transport. The Committee points out that in several instances its recommendations have not been given due consideration and in one particular case were not sought, but despite the provisions in the Transport Acts of 1947 and 1953 as to the competence of the Central and Area Committees, it is not clear to what extent the complaints of the Central Committee are justified. The latter, however, admits that the Minister has expressed Government appreciation of the work of all the Committees, and that he has undertaken to encourage his Ministry to make more use of the consultative machinery.

The reports and recommendations cited are those upon the increase in London Transport passenger fares, certain provisions of the Transport Bill, 1952, and the Clyde steamship services. The Minister of Transport set up a committee to consider the question of standing passengers in public service vehicles. This latter committee sought the advice of operators, employees, and vehicle manufacturers but not that of the Transport Consultative Committees, which received objections lodged on behalf of users throughout the country. The Central Committee approached the Minister but was informed that its function was to watch the interests of users of transport services provided by the British Transport Commission and that it was outside its province to deal with general questions affecting transport. The proposals as to standing passengers had been formulated after close consultation with the Licensing Authorities who were in close touch with the requirements of the public. The Committee found it difficult to understand why, in view of the millions of passengers carried by the Commission on the roads through the London Transport Executive and controlled undertakings, it had been thought fit to consult the Licensing Authorities rather than itself.

The Transport Users' Committee forwarded its observations on the Transport Bill, 1952, to the Minister on January 13, 1953, with certain suggestions relating to road transport. A further recommendation was made that the Commission give the Committee an opportunity of commenting upon its proposals for reorganisation before publication. Among the items which it had in mind were the preservation of present Regional railway boundaries, the continuation of central control of wagon supply and the setting up of a central organisation to ensure that the economies and advantages of employing standardised units, both mechanical and otherwise, would be continued. These observations, the Committee complains, were received in a manner which caused it great disappointment, but it continues to hope that its suggestions may yet be adopted.

The South Eastern Area Committee considered the proposals of the British Transport Commission in respect of the closure of certain lines in the Isle of Wight and after hearing objections made recommendations similar, on most points, to those of the Commission. The Central Committee agreed with the conclusions of the Area Committee and, in addition, noting that road services over the route were carrying 600 per cent more traffic than the railway, recommended the closure of the 2¾-mile Brading-Bembridge branch, recommending in addition that, by means of special legislation, the fares of holidaymakers using the Island railways in the summer season be raised to a level which would reduce, if not abolish, the loss on working the lines concerned. Meanwhile the Central Committee's recommendations are still the subject of consultations between the interested parties.

The East Anglia Area Committee considered the proposed closing of the Wivenhoe-Brightlingsea branch line and after hearing a large number of objections, recommended that the line, which had for many years operated at a substantial loss, should be repaired and kept open for three years, after which the Commission should be free to raise the question of the future of the line. The Central Committee found that the line had been losing money at the rate of £8,000 a year but that Brightlingsea, at the end of the spur line, had suddenly lost valuable transport facilities. The railway had already been obliged to spend £10,000 since January, 1953, to restore the track to enable the sea wall to be repaired and not more than an extra £4,500 would be needed to restore the branch completely. The only alternative was one indifferent road and in the circumstances the Central Committee agreed with the Area Committee. It recommended that the railway should be kept in operation for a period of three years and that during this period the road system should be brought up to date so that an efficient passenger and freight road service may be established.

In the view of the Committee the railways should make every effort to regain long-distance passenger traffic now carried in coaches on congested roads. The Commission has been asked to report to it the financial results of "Starlight Special" services and to say whether it is proposed to try out similar services elsewhere. The Commission has already stated that while there is no doubt of the popularity of this experiment, it has not yet been possible to say whether it is a financial success.

Difficulties experienced by passengers when arranging journeys to places from which the passenger train services have been withdrawn were brought to the notice of the Central Committee. The trouble arose from the fact that the timetables no longer included the names of closed stations. The Committee requested the Commission to introduce a system whereby stations would be retained in the timetables for at least two years after closure with an indication that a substituted service was in operation. The Commission is giving effect to this suggestion by arranging that, where a service has been completely withdrawn from a line represented by a separate table in the timetable, the heading will continue to appear with the information that the line is closed and particulars of the alternative road services. Where one or more stations on a line have been closed but the line itself still has a passenger service a suitable note will be shown beneath the appropriate table. This is an illustration of useful work performed by the Committee.

Other subjects dealt with during the year included travelling facilities in North London, where the Committee recommended construction of additional facilities as early as possible. The re-introduction of traders' season tickets is also urged upon the Commission. It is the opinion of the Committee that to foster the goodwill of the principal customers of the railways that these should be restored.

The work of the 11 Area Consultative Committees increased during the year, and 51 meetings were held. Recommendations were made upon upwards of 260 substantive submissions in connection with which over 100 deputations were received. There were 14 proposals for the closing of unremunerative branch lines and 37 for withdrawal of passenger services and closing of lightly used stations on main line routes. The Committee deprecate the increasing number of complaining parties who present their cases through counsel. This has changed the originally informal character of its meetings and takes up more time than the members may be prepared to give to a voluntary body.

Safety on the Railways

IN his Cantor Lecture on "Safety on the Railways," the third of a series dealing with safety in transport, delivered last Monday before the Royal Society of Arts, Lt.-Colonel G. R. S. Wilson, Chief Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, shows that, using the averages for the years 1946-52, a person making three railway journeys a week by rail in this country would probably meet his end in an accident on reaching the age of 230,000. The standard of safety on railways ought to be high, in the circumstances obtaining, with track signalling and rolling stock maintained by trained and disciplined staff, working under stringent rules, with traffic running on a special and fenced in track.

The origin of State regulation of railways, dating back to 1840, is discussed by Colonel Wilson, and the various powers and duties of the inspectorate as they evolved under various Acts, and were expressed in the official requirements governing new works. Although the recommendations made in the Inspecting Officers' reports on accidents, he points out, are not enforceable by law they are in fact practically always accepted by the railway authorities and so are extremely effective. Nationalisation of the railways has not affected the work of the inspectorate, whose annual reports have continued as before. In 1868-74, the passenger fatality figure was 1 in 10,000,000 passenger journeys, against 1 in 35,000,000 today, representing a considerable improvement in the light of increased traffic, heavier loads, and higher speeds. This is attributable to the application of technical safeguards, which have been much developed over the years.

At one time there was some difficulty in getting certain railways to apply improved methods of working while others did so without official pressure. In 1889, however, a very serious accident caused Parliament to render obligatory block telegraph working, interlocking, and automatic continuous brakes, for all passenger lines and trains. These form the fundamental basis of safe working in this country today.

In outlining the functions of the block telegraph system with the token method of operating single lines, Colonel Wilson stresses the importance of well-drawn rules and of having properly trained and conscientious staff in the signalboxes, and so on. Describing the principles of interlocking and of modern signalling controls which have come to be increasingly applied of recent years in order to give signalmen all possible assistance, he pays a tribute to the early forms of lock-and-block, so much developed some 60 years ago. He explains how improved techniques have enabled their effects to be obtained with less clumsy equipment, which is being done wherever it seems beneficial. The experience of the last 50 years has shown this to be the correct course.

After explaining the advantages of the track circuit, showing how it aids the signalman's work, effects economies and makes automatic signalling thoroughly practicable, Colonel Wilson discusses automatic installations, and mentions the new signalling at York controlling several miles of line and outlying junctions from one signalbox, using route setting.

He goes on to describe the different types of continuous brake and necessity for automatic action, with some reference to the features of the vacuum and air pressure systems. Were one starting anew today, he considers, the air pressure principle would find general application in Britain. From brakes he turns to automatic train control and gives a résumé of the position in Britain and the situation resulting from the trials taking place on the East Coast route and the policy to be followed when they are satisfactorily completed.

With the problems involved in keeping free from derailments, much, he points out, has been learned from experiments, and at times bitter experience, but the question is exceedingly complex and our knowledge on the subject not yet complete. Breakages of parts of rolling stock and other equipment sometimes follow the development of flaws, offering another problem calling for close and continuous attention.

Carriage axle failures, once an anxiety, have fallen to one or two a year. Flaw detecting equipment now is greatly improved. There are in Great Britain fewer rail breakages than in some countries; emphasis is laid on the importance of a high level of maintenance of rolling stock, track, and other equipment.

As to the future, Colonel Wilson finds it difficult to foresee any startling innovations in technical safety equipment. Radar has no application to the prevention of collisions, and radio is of doubtful value as a safety device, he thinks, though otherwise useful. Future progress probably lies in extension of proved safeguards in the course of renewals and modernisation. The distraction associated with present-day conditions would seem to make the need for technical aids to safe working more pressing.

Record Earnings in New South Wales

EARNINGS of the New South Wales Government Railways for the year ended June 30, 1953, reached the record figure of £72,675,775, an increase of £3,766,055 on the total for the previous year. Working expenses were £66,451,995. This comparatively small increase of £2,431,802 when expenditure beyond the control of the Department increased by £6,911,000, was the result in part of the transfer of the Department's electricity undertakings to the Electricity Commissioner of New South Wales on January 1, 1953, but mainly of a major economy campaign conducted during the last nine months of the year. The profit on operations of £6,223,780 and the £800,000 contribution from the Government towards losses on working of country developmental lines were together insufficient by £1,449,839 to meet interest on loan capital and the other statutory charges debited against the Department.

Passenger journeys were also a record, totalling 271,698,493, an increase of 3,530,897 on the record number for the previous year, but goods tonnage declined by 651,217 to 17,876,515. New motive power and rolling stock placed in service included 24 Beyer-Garratt locomotives of the 4-8-4 + 4-8-4 type described in our July 4, 1952, issue; twenty Baldwin 2-8-2 oil-burning locomotives; one air-conditioned train, which began operating as a "North Coast Daylight Express" between Sydney and Grafton; and 1,191 freight vehicles.

Features of the year included the introduction of a successful series of one-day train tours on Sundays, the mass movement of 30,000 school children for their Coronation Display, the opening of a new inter-State booking office at Sydney Central Station, the appointment of a Special Service Officer to attend to inquiries about railway services arising from press and radio publicity, an extension of the use of steel containers, the introduction of bulk loading of goods traffic, and the handling of special and out-of-gauge loads. On the longer tours, air-conditioned stock, with buffet, was used.

A large number of steel containers, with a carrying capacity of up to 5½ tons, has now been placed in service; among their advantages is the fact that they obviate transshipment of goods at break-of-gauge points between Sydney and Melbourne and Sydney and Adelaide.

BLACK SMOKE FROM ENGINE: FINE UNDER 1845 ACT.—Because an engine emitted black smoke for 20 minutes the British Transport Commission was fined £5 at Preston Magistrates' Court recently under the Railways Clauses Consolidation Act, 1845, and the Regulations of Railways Act, 1868. For the prosecution it was said that legislation required that locomotives should have apparatus by means of which they could consume their own smoke. In this case the apparatus was not used when the engine was in a siding. The solicitor for the Commission pleaded guilty on its behalf. He said that lectures were given and pamphlets issued in an attempt to instruct staff in the matter of smoke abatement. The railways could not guard against the human element. Legislation as to the emission of smoke by locomotives is understood to be comparatively rarely enforced in this country, though frequently in certain States of the U.S.A.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Branch Line Closing

March 2

SIR,—Not enough attention has been given to the possibility of operating branch lines of marginal economic value on a part-time basis. Many lines deserted the rest of the week carry a reasonable traffic on Saturdays or market days, or, as in the Isle of Wight, during the few months of the summer season. Frequently the alternative road transport is hard pressed to meet these peak demands.

With the present-day wide use of mixed-traffic locomotives, motive power and crews used on freight trains during the week should be available for passenger work on Saturdays, when goods traffic is usually light. It would be uneconomic to provide platform and booking office staff for the sake of one or two days' work a week, and tickets for these services would have to be issued and collected on the train, using suitable rolling stock of the G.W.R. auto-train type.

As long as the lines concerned have to be maintained for freight traffic, the additional direct cost of running these part-time train services might be more than covered by the revenue they would earn.

Yours faithfully,

J. N. FAULKNER

53, Westfield Road, Surbiton

Anglo-Continental Traffic

February 26

SIR,—I refer to Mr. R. E. Sinfield's paper to the Railway Students' Association commented on in your issue of February 26. If British Railways introduce a new steamer on the Havre route, there is little chance that it will promote world sales of that particular type of steamer. The supremacy of British shipbuilders is already well known throughout the world. If, however, at high cost to themselves one or other of the British air corporations introduces a new British aircraft involving revolutionary principles against the formidable and able competition of American manufacturers, then it is doing a service to British industry. The Americans forged ahead in civil aircraft development during the war whilst Britain spent its time producing military aircraft, and the leeway is only just being made up. If B.E.A. had not adopted the "Viscount" so confidently, would the world market have reached 100 in so short a time?

However, I really want to say how much I agree with many of Mr. Sinfield's contentions. With European railways nationalised, and European airways almost all nationalised, a constant competitive price-cutting policy is senseless. Intelligent discussions at policy-making level on how to create and develop new traffic to the advantage of both forms of transport seems an eminently sensible step.

There are problems in this seemingly simple suggestion. Some Continental air operators regard their London routes as feeder services to their world routes, and are currently prepared to subsidise the former because of the profits to be derived from the latter. If all the British nationals who travel by foreign airlines chose to travel British, the air subsidy problem would hardly exist in Britain, though it might create bigger problems for the other air operators.

There is a further difficulty. By international agreement, there is an infiltration into the European air network by the large aircraft of other world carriers, and they see anything they can pick up on internal European flights as sheer "bunce," so that they are greatly averse to any increase in the applicable fares. These are powerful voices at the International Air Transport Association, where any decision on fares changes must be unanimous, or an "open rate" situation would prevail. This would mean that any airline could charge what it liked, which would hit both B.E.A. and the European railways very severely.

Perhaps I am out of date, but I am an advocate of the somewhat peculiar theory that the transport operators of Europe, both surface and air, ought to be able to determine their own conditions of operation, knowing their own field and their own economic conditions. Any outside operators anxious to enter should only do so on European terms. I would face any threat of reciprocal conditions, because Europe is the prize—until, of course, the U.S.A. permits foreign airlines to operate within its territory.

Yours faithfully,

A. C. PING

59, Grosvenor Avenue, Carshalton, Surrey

Automatic Couplers

February 18

SIR,—Reference the International Labour Office study of accidents to yard staff (the subject of an editorial note in *The Railway Gazette* of February 5), the hazards of coupling and uncoupling could be much reduced in this country if the Buckeye, or its equivalent, were adopted as standard, eliminating the shunter's pole; in addition there would be considerable saving of time.

In the U.S.A., the railways were compelled by law to fit automatic couplings as long ago as 1893. The Japanese converted 55,000 wagons to automatic coupling in 24 hr.

British Railways would be well advised to convert their rolling stock in a similar manner; apart from finance, it would be interesting to know the reason against such a course.

Yours faithfully,

G. RICHARD PARKES

Montcroft, School Lane, Formby, Liverpool

French Railways Speed Record

February 27

SIR,—Less than due praise has been given to the recent French National Railways record rail speed achievement. These tests show that the French are not content with their present fast timings and are striving to give an even better service.

A British Railways spokesman is reported by our daily Press to have stated that a still higher speed could be attained in this country, if desired, but he did not say where a sufficiently well maintained length of permanent way is to be found for safe running at 150 m.p.h.

The design of the record-holding "A4" class locomotive *Mallard* is now 19 years old, and no modern high speed locomotives have been built here since 1939. The French locomotive designers deserve great credit for producing a mixed-traffic Co-Co engine capable of such a flexible performance.

The management of the S.N.C.F. has done well in putting a convincing case for main-line electrification to the succession of French Governments and in obtaining authority for the necessary capital expenditure, without which the French railways could not have achieved their present efficiency and the world railway speed record.

Yours faithfully,

A. J. BEEDHAM

34, Clanricarde Gardens, London, W.2

[As stated in our February 26 issue, the object of the French tests was not speed for its own sake. The policy of the British Transport Commission is a high general level of passenger train speeds, not a few ultra-high speed trains. If, to achieve some practical purpose, it were decided to experiment with speeds in the 150 m.p.h. range on British Railways, no doubt a suitable stretch of track could be made available, though line occupation is a difficulty.—ED., *R.G.*]

THE SCRAP HEAP

Reindeer Ride

Six hundred reindeer from Sweden went hundreds of miles by train recently to their new home in the Hardangervidda, the Norwegian mountain tracts between Bergen and Oslo. The reindeer travelled in large, open wagons. At points on the route fresh snow was shovelled into the wagons and the stocks of reindeer moss replenished. At Ustaoset, the winter sports resort, the reindeer were unloaded, seemingly none the worse for their long train trip. Ten herdsmen took the reindeer to their new pastures in the Hardangervidda, where considerable herds of reindeer are already settled.

York Mystery Plays Poster

The British Railways, North Eastern Region, poster of the York Mystery Plays reproduced below, is to be exhibited at stations throughout Britain, and copies also will be sent to Canada and the U.S.A.

Scenes from the 29 plays, which depict the Creation and Fall, the Life of Christ, and the Redemption of Man, are shown in medieval outline in 12 colours, with blues predominating. It is believed this is the first time railways have turned to medieval art in the production of a poster.

The scenes are pictured on the greensward covering the nave of the 800-year-old St. Mary's Abbey, now open to the sky. The plays were given here in 1951, after a lapse of nearly 400 years, and the abbey again will be the stage this year, from June 13 to July 4, when there will be 120 performers. They were acted by members of the crafts and trade guilds of the city every year in the streets on Corpus Christi Day from about 1360 until 1580.

Rail Born

A correspondent has sent us an extract from a Spanish newspaper which states that a baby girl, who was born in a night train from Seville to Huelva, fell on to the track whilst the train was running at low speed, and was found by a railwayman. He handed the child over to the authorities in the village of Niebla, where she was duly taken care of. On arrival at Huelva the mother was taken to hospital.

On learning of the occurrence the inhabitants of Niebla had the child christened Maria de la Renfe.

Renfe is the general abbreviation for "Red Nacional de los Ferrocarriles Espanoles," Spanish National Railways.

Cup Winners

I wonder (asks a railway correspondent) how many railwaymen felt a twinge of conscience on reading the statement by Lord Mancroft that their employers lost 3,000,000 cups a year. It is a pretty safe bet that there are around half a million of them in daily use by all grades in offices, porters' rooms, and similar places all over British Railways.

I plead guilty to having two in my locker, and no matter where I go, from platelayers' cabins to stationmasters' offices, seldom are private cups in evidence. My railway service goes back 40 years—when cups, so to speak, were ten a penny—and always during that time has the possession of one or two railway cups been regarded by the staff not as a mere perquisite but as an automatic condition of employment.

Indeed, every employee who has been "brought up" to the practice, although it must be said that every now and again—when the railway police "have nowt to do," as the staff unreasonably put it—intensive searches have been made, with the battle-cry "Bring out your cups" bringing out many, to be replaced almost immediately on the arrival of the first long-distance train.—*From "The Manchester Guardian."*

Taking the Plunge

Indiscriminate use by the B.B.C. of a chime whistle effect representing a train passing at high speed has been criticised by a correspondent to the *Radio Times*. "Its most ridiculous use," he writes, "was during a broadcast last year, when it was heard representing a train passing a goods yards a few hundred yards outside Harwich Parkeston Quay Station. I can only say that, if that particular train was going towards London, British Railways have a locomotive of whose phenomenal powers of acceleration they are completely unaware, or, if the train was meant to be approaching the harbour the B.B.C. denied us the additional excitement of hearing it enter the water at 60-100 m.p.h."

The Last Straw

(*The "Golden Arrow" diesel hauled. See our issue of February* 26)

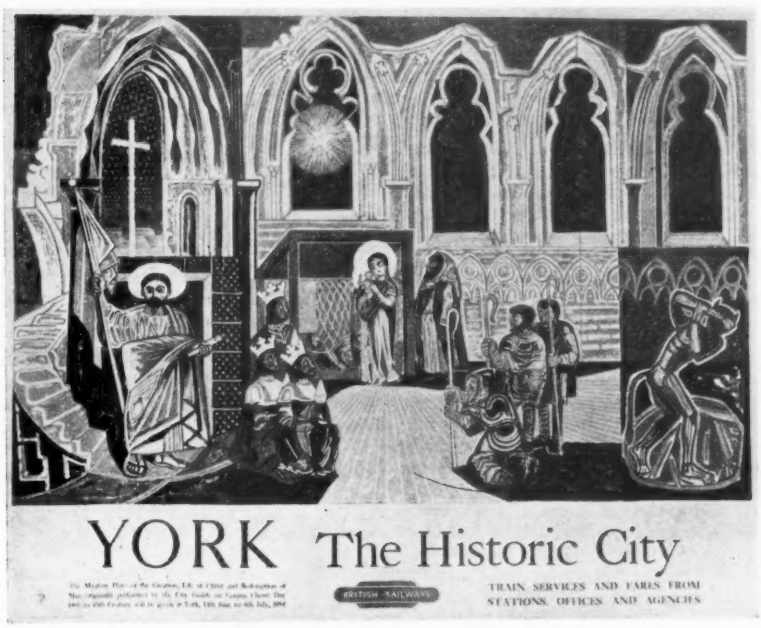
Come, spotters, let me freeze your marrow
With tidings of the "Golden Arrow."
Your last stronghold has been invaded,
The powers that be have been persuaded
To permit oily infestation
To permeate Victoria Station.

These constant shocks that greet my eyes
Fill me with dread and dark surmise.
Will nothing check this dire devotion
To such perfidious locomotion?
Must this infernal, oily racket
Even enslave the Channel packet?

Betteshanger, Snowdown, take your cue;
Think what this all may mean for you,
When top-link drivers stand aside
And watch the gleaming, Pullman pride
Of Britain yanked off to the sea
With asthmatic efficiency.

Our dreams, our ecstacies are over;
Folkestone, adieu! and farewell, Dover!
But, through my tortured, troubled brain,
One question runs, time and again:
Must diplomats and elegants
Travel by oil-can now to France?

A. B.



Twelve-colour poster produced by the Department of the Public Relations & Publicity Officer, British Railways, North Eastern Region, depicting scenes from the York Mystery Plays

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

New Standard Container-Trailers

In our November 20, 1953, issue we stated that the South African Railways were obtaining 150 five-ton container trailers. The accompanying illustration shows the first of this type, which the S.A.R. have decided to adopt as standard for this service.

Details of the tonnage handled by mobile container-trailers were recorded only during part of the period when the original units were on test—April, 1950-June, 1953, when 598 tons were carried in 283 container-trailer loads in three- and five-ton units. Two of the new five-ton units can be loaded on a "DZ 7" type steel bogie wagon, and one on an "ES" type four-wheel wagon.

A 5-ton container-trailer of the type now adopted as standard by the South African Railways

Traffic conveyed by mobile container-trailer is subject to ordinary rail charges plus a surcharge (20 per cent for furniture and household removals). Double normal cartage is charged at cartage stations.

SAUDI ARABIA

Dammam-Riyadh Passenger Service

The current timetable of the Government Railway shows six workings weekly each way between Dammam and Riyadh by the air-conditioned, self-propelled Budd railcars, with refreshment facilities. These cars convey first class passengers only; third class passengers now are conveyed in passenger coaches formerly in use on U.S.A. railways.

The Budd cars cover the 355 miles between Dammam City and Riyadh in 8 hr. 15 min. each way three days a week, and in 11 hr. 10 min. westbound and 11 hr. eastbound on three other days, when also the cars stop at Ain Haradh, where eastbound and westbound cars cross, for a full 20 min., to allow passengers time for prayer. There is no service on Fridays, the Islamic day of rest. The journey is made by day in all cases.

A speed restriction of 62 m.p.h. is in force for the Budd railcars, compared with 44 m.p.h. for other passenger and 37 m.p.h. for goods trains. The working timetable draws attention to the necessity for restricted speed during a heavy wind and moving sand, in heavy rain, and in districts where there is heavy rain, and also where there is evidence of run-off water.

UNITED STATES

Diesel Operation of Santa Fe

This year is expected to see the complete dieselisation of all the regular passenger, freight and shunting services of the Atchison, Topeka & Santa Fe Railway, which with its 9,099 route miles of line is the second largest railway in the United States, and will be the most extensive system in the world to be converted to diesel-electric power.

The management has decided to tackle the difficult problem of seasonal traffic, at times considerable, not by investing in a number of expensive diesels for stand-by purposes only, but by retaining its two most efficient steam locomotive classes—the 65 4-8-4s and the 36 2-10-4s, among the most powerful engines of their wheel arrangement in the U.S.A.—in working order for use when required.

While this arrangement requires the continued maintenance of steam locomotive watering, coaling and servicing facilities throughout the whole length of the Southern District main line—the principal Santa Fe freight route between California and the east—the economy of this method is regarded as justifying it. At present the Santa Fe owns 1,652 diesel-electric units.

Operating a 1 in 17 gradient

The steepest standard gauge gradient on any American railway is believed to be the 1 in 17, between 1¼ and 1½ miles long, on the Columbus to Madison, Indiana, branch of the Pennsylvania Railroad. Recently two 1,500 h.p. diesel-Co-Co-electric locomotives have taken over the freight working; they are equipped with dynamic braking; wheel-slip control with automatic sanding; a rail cleaning device; and a special type of control which enables the engineman to control tractive force in fine variations to meet the difficult track conditions.

ARGENTINA

International Trains to Antofagasta

Argentine and Chilean railway delegations recently met in Salta to discuss the introduction of a direct passenger service over the Northern Transandine line between Salta and Antofagasta (Chile). At present both Argentine and Chilean services terminate at the border station of Socompa.

SPAIN

Increased Rates

On February 12 the fares of the Renfe were increased by 10 per cent for passengers and freight rates by 20 per cent, except for a few commodities. The rates for conveying anthracite coal loaded at pithead and charcoal have been increased only 10 per cent.

Electrification

At the end of January electrification was inaugurated between Torre del Bierzo and Ponferrada, an extension of the existing electrification between Brañuelas and Torre del Bierzo. The distance throughout is 49 km. Electrification is in progress between Brañuelas and León.

FRANCE

S.N.C.F. Budget

After two rejections by the National Assembly of the Minister of Transport's proposed allocation of fr. 128,300 mil-

lion (£130,000,000) for the S.N.C.F. in 1954 (see our January 15 issue) an amended allocation of fr. 125,300 million (£127,000,000)—some fr. 20,000 million (£20,000,000) less than the sum requested by the S.N.C.F.—was finally approved both by the National Assembly and by the Upper House (Conseil de la République). The Government undertook to increase by fr. 3,000 million the capital investment powers of the S.N.C.F. and submit a supplementary estimate if traffic fell below their estimates.

Rail-Road Co-ordination

During the course of the debate in the National Assembly on the 1954 budget, the French Government undertook to introduce, before July 1, a co-ordination bill designed to reduce to as low a level as possible the financial liability of the State in regard to the operation in France of the various forms of land transport. No indication has so far been given of the scope of the proposed bill.

AUSTRIA

Underground Railway in Vienna

A committee set up by the Austrian Association of Engineers & Architects has investigated the problem of the future planning of urban railway facilities in Vienna. It has come to the conclusion that there is a case for the extension of the existing Stadtbahn as well as for the planning of several underground railways whose operation and fares would be integrated with the existing urban and suburban lines. It advocates, in principle, the extension of the Stadtbahn from Gumpendorfer Strasse to Meidling Südbahnhof to provide a connection with the Outer Circle Line (Gürtelbahn) which would itself be extended from Heiligenstadt to Floridsdorf.

In spite of obvious economic and political objections, the Committee believes that an early start on the planning of a least one of the proposed future underground railways would be justified. This would follow the alignment Praterstern-Central area-Vienna West Station, which is regarded as a non-controversial route, and would make an important contribution to the relief of surface transport and street congestion. Tentative plans should also be prepared for future extensions of this route, and for the in-town sections of two further routes.

IRELAND

G.N.R. Stockholders

There are still some missing G.N.R. stockholders, and search for them continues. Of the 8,000 stockholders to receive payments, as a result of the acquisition of the company by the two Governments, 400 have failed to make their claims and the vouchers in their cases have been returned to the company.

It has been stated that many claims to this money have been made by persons representing themselves to be the legal representatives of these stockholders, but all the claims will have to be fully investigated before any action can be taken. The sifting of these claims is a complicated task which will take a considerable time.

Strabane-Letterkenny Railway

At the annual meeting of the Strabane & Letterkenny Railway Company, the Chairman, Captain J. C. Herdman, said he saw no grounds for optimism if their traffic continued to dwindle year by year. More than 5,000 fewer passengers were carried in 1953 than in the previous year, and each succeeding year recorded its decrease. The past year's total compared with that of 1950 showed a decrease of 18,242, or 24 per cent.

Merchandise tonnage was slightly better than in 1952, but it was only 47 per cent of the total carried in 1947. Livestock carryings were the worst for many years. The Chairman said that recurring losses must inevitably add support to the view, stated to be expressed by a public representative, that the line should have been closed. Keeping open the railway, with its ever-recurring heavy maintenance expenditure, was too onerous and expensive a task to serve those who used the railway only when no other means were available, or those who offered merchandise only when their own lorries were on more remunerative haulage. The report and statement of accounts were adopted. Captain Herdman was re-elected Chairman for the ensuing three years.

Publications Received

Engineering as a Career.—A booklet issued by the North British Locomotive Co. Ltd. gives details of the company's apprenticeship schemes available to those who intend taking up engineering as a career. The normal duration of an engineering apprenticeship is five years, and this particular course is open to approved candidates who have reached the standard of General Certificate of Education in England, or the Scottish Leaving Certificate. The course is designed to provide the general training to qualify candidates as draughtsman, foreman, production engineer, rate-fixer, or assistant manager. Apprentices, under this scheme, are required to attend evening class at a technical school for three years. If an engineering apprentice shows outstanding ability, the company is prepared to promote him to a university apprentice training course and to award a scholarship at Glasgow University or at the Royal Technical College, Glasgow, so that he may obtain a degree or diploma in engineering. Other courses available include a sandwich system for those who intend to continue their studies, at a university or technical college, or a post-graduate course for those with a degree from a university or a diploma from a technical college. The scheme provides the necessary background for a senior position in management, technical, or administrative posts. A number of bursaries and scholarships is available. Training is directed by the company's Personnel Manager, and the work and progress of apprentices by the Labour Manager and Apprentice Supervisor.

The Railwaymen's Year Book, 1954. London: Railwaymen's Publications Limited, Vernon House, Sicilian Avenue, W.C.1. $8\frac{1}{2}$ in. × $5\frac{1}{2}$ in. 96 pp. Illustrated. Paper covers. Price 4s.—The 1954 edition of *The Railwaymen's Year Book* contains much information of interest to railwaymen. There is a message of New Year greetings from Sir Brian Robertson, Chairman of the British Transport Commission, and a foreword by Mr. J. S. Campbell, General Secretary, National Union of Railwaymen. Articles range over many subjects, including named trains and overseas services. Railway staff may order direct from the publishers in lots of eight or more copies at 2s. 6d. a copy, including the remittance with their order.

Enfield Review.—A new quarterly bulletin with the title *Enfield Review* has been inaugurated by Enfield Cables, Limited, Victoria House, Southampton Row, London, W.C.1. The first issue is planned round the subject of cabling in power stations, which is treated with ample illustration and a double-page diagram in four colours of one of the installations for which the company has made and laid the cables. Modern practice as exemplified at Chadderton and Doncaster, the two stations dealt with, is described in a manner that will be of interest to all concerned with the distribution of electrical power, and suggests that future issues of this technical bulletin will be a source of data and ideas useful outside the particular branches of industry with which each number will be concerned.

Safe Driving.—A booklet, "A Guide to Safe Driving," has been issued by Unilever Limited for its car drivers. The text is designed to be of practical value to all drivers, no matter how experienced. Unilever Limited states that as large operators of road transport it has special responsibilities in road accident prevention, and this booklet supplements several already issued to the firm's commercial vehicle drivers. As such it is certain to be of great interest to any undertaking which operates a large vehicle fleet. Mr. A. G. Marsden, Transport Adviser, Unilever Limited, contributes a preface to the booklet.

The Brazil-Bolivia Railway

Important link completed of a through route between Central Bolivia and the Atlantic

THE Brazil-Bolivia Railway, connecting Santa Cruz de la Sierra, in the east of Bolivia, and Corumba, capital of Mato Grosso, in the extreme west of Brazil, has been completed and will soon be inaugurated officially by the Presidents of Brazil and Bolivia.

Under the Treaty of Petropolis (1903) Bolivia renounced its claim to the Acre Territory and, in exchange, Brazil undertook to spend £2,000,000 to improve communications and increase trade between the two countries. A railway was built from Porto de Santo Antonio, on the Madeira River, to Guajara-Mirim on the Mamoré, to bridge a chain of cataracts. On its completion, in 1912, the collapse of the rubber boom limited the economic value of the line and the project to extend it to Vila Bela, in Bolivia, was abandoned.

The Petropolis Treaty was modified in 1928 and again in 1937 and two complementary agreements were signed in 1938. Under the first of these Brazil undertook to build a line from Corumba to Santa Cruz de la Sierra, on the eastern slopes of the Andes, on the old trade route to Argentina and Paraguay. The second agreement provided for an extension from Santa Cruz to Cochabamba, 490 km. away, where it would link up with the existing Bolivian railway system, thus forming an unbroken transcontinental route from Arica, in Chile, to the Brazilian Atlantic port of Santos. The distance from Santos to Santa Cruz is 2,566 km. and to Arica 4,023 km. Brazil agreed to finance the extension, against repayment in money or oil, and a later agreement provided for the organisation of mixed Brazil-Bolivian companies to exploit, with a 55-year monopoly, the oil reserves in an area of 116 sq. miles between the rivers Ichilo and Parapeti.

Constructional Specifications

A Commission was appointed to draw up plans for the Corumba-Santa Cruz line and supervise construction. The length of the line was to be 680 km., divided into five sections, and the gauge to be metre. Rails of 32 kg. per metre were specified. The maximum gradient was to be 1 in 100, compensated at curves, and the minimum radius curve 300 m. Construction began in 1939.

From Corumba the line traverses a district of swamps for a distance of 100 km., follows the slopes of the Santiago highlands and continues across the plateau to San José. The region was little known and almost uninhabited. All labour had to be brought from Brazil and wartime shortages delayed progress. By 1949 the track had reached San José, 1,500 ft. above sea-level and 328 km. from Corumba. This section was then opened for goods and passengers; passengers were carried free to attract settlers to the district. Stations, which soon became the centre of small villages, were opened at El Carmen (113 km.), Roboré (254), San José (328) and Motacucito (487). Some 70 viaducts and 15 bridges were built over swamps and rivers, some with spans of 40 to 50 m.

In 1951 work was again delayed, while rails were awaited from the steelworks at Volta Redonda, Brazil. The first 550 km. of track were completed in 1952 and tenders were then invited for a bridge 1,000 m. long across the Rio Grande at Rincon, near Santa Cruz. An area of 740 acres was appropriated for the terminal station at Santa Cruz and the last rail was laid at the end of 1953.

New Outlet for Bolivia

The line running eastwards from Cochabamba has reached Mizque, at an altitude of 2,000 m. When it attains Santa Cruz, Bolivian dependence for an outlet on the Pacific ports and Argentina will be lessened and access to the rich mineral zone of the eastern Andes will be open through Brazil. Even so, until oil becomes available the line seems likely to operate at a substantial loss to the Bolivian Treasury. It has been estimated, perhaps somewhat optimistically, that Brazil will consume annually some 354,000 tons of petroleum products in the area between Corumba and Bauru and that the demand will be met by Bolivian oil, because of its relatively low cost. The resultant freight should be more than sufficient to cover operational costs when diesel traction has replaced steam.

The Bolivian undertaking, Yacimientos Petroliferos Fiscales, is exploiting the oilfields of Bermejo, Sanandita and Camiri. A 6-in. pipeline to Cochabamba and a 4-in. branch to Sucre convey crude oil from Camiri refineries in those cities. It is in this area, between the Rivers Ichilo and Parapeti, that the Brazil-Bolivian companies will operate, but the oil zone actually extends from Santa Cruz to Yacuiba in the south and north-west to the Peruvian frontier.

In December a reciprocal agreement was signed by Brazil and Bolivia, providing for commercial exchanges, valued at U.S. $4,000,000 in each direction. Brazil will receive mineral ores in return for cotton goods and agricultural products. Apart from such limited trade opportunities the chief beneficiary of the railway in the immediate future will be Santa Cruz. This city of 30,000 inhabitants, centre of a fertile agricultural region, has hitherto been isolated from the rest of Bolivia. A rough track now being replaced by a motor road connected it with Cochabamba, and mule or wagon trails led to the railway at Sucre and to Puerto Suarez on the Brazilian frontier.

Map of existing and projected lines which will eventually form a coast-to-coast line from Arica to Santos

GEORGE COHEN SONS & CO. LTD.—The directors of George Cohen Sons & Co., Ltd. have resolved that the half-yearly dividend due on March 31, 1954, on the £1,500,000 4½ per cent cumulative preference stock be paid at the rate of 4½ per cent per annum less tax, and that an interim dividend of 3½ per cent actual, less tax, be paid on the £1,500,000 ordinary stock of the company on March 31, 1954, in respect of the company's financial year ending on that date.

Sixteenth International Railway Congress

Modernisation of Railway Methods of Recruitment

Permanent and temporary staff: testing and qualifications: part played by medical services

QUESTION 7 for consideration by the International Railway Congress in London next May deals with the modernisation of recruiting methods, the ratio between permanent and temporary staff, medical services and other similar matters. Replies on behalf of America (North and South), Australia, Burma, Ceylon, Denmark, Egypt, Finland, India, Indonesia, Iraq, Iran, Republic of Ireland, New Zealand, Norway, Pakistan, South Africa, Sweden, and the United Kingdom and other countries of the British Commonwealth have been examined by Mr. Frank Lemass, General Manager, Coras Iompair Eireann. The questionnaire was sent to 37 organisations and 19 replies were received. All were from administrations having fixed establishments controlled by methods such as budgetary allocations and careful scrutiny of statistical returns of staff.

Personnel Tests

There have been few changes in the tests for determining personnel requirements over the last 25 years, but on the Indian railways recent legislation as to hours of employment and leave, and so on, has entailed changes. Since 1947, the Norwegian State Railways have altered their tests as a result of the general improvement in the statistical material available and the greater stability of schedules. The same tests are used to evaluate requirements of both permanent and temporary staff in all administrations except the Southern Railway System of U.S.A. and the Atchison, Topeka & Santa Fe, neither of which employs temporary staff. In no case is there a fixed ratio of permanent to temporary staff who are employed to cover fluctuations in traffic, renewal of way and works, and construction and building programmes.

It is generally agreed that there is no advantage in the employment of temporary staff other than that arising from economic working. No difficulties in the social sense have arisen from the employment of temporary staff, but the East African Railways & Harbours have difficulty in maintaining reasonable standards of output and efficiency by reason of the large turnover of native labour.

Only in Great Britain is there any legal obligation on the railways to give any priority in recruiting to war and civil invalids. By the terms of the Disabled Persons (Employment) Act, 1944, 3 per cent of total staff requirements must come from these sources. During the 1939-45 war years, vacancies in the Indian Government Administration Board were reserved for "war service" personnel, but under the constitution there can be no discrimination in recruitment to the Government service.

Clerical and Wages Grades

Recruitment to the clerical and wages grades is generally through the medium of unsought applications, replies to advertisements, or through employment agencies, but the New Zealand Government Railways also recruit through immigration and the Danish State Railways through trade unions. In the U.S.A., the Pennsylvania Railroad also uses radio announcements.

All the undertakings except the Nora Bergslags (Sweden) and the Norwegian State railways have a standard form of application for employment in which comprehensive details of age, nationality, height, education, and so on, are sought. Applicants for wages grade positions are not usually required to conform to set educational standards, but a minimum standard of proficiency in reading, writing, and mathematics is expected. Clerical workers are generally required to be of secondary or high school educational standards. In Ireland, Coras Iompair Eireann fills clerical positions through open competitive examinations. British Railways require candidates not in possession of the General Certificate of Education to pass a standard examination with 50 per cent marks in arithmetic and English and a minimum of 50 per cent on the whole paper.

The Victorian, Indian, Egyptian State, New York Central, Pennsylvania and the Southern of U.S.A. systems check the social background of applicants with the police. Psychological tests are applied by some administrations.

In Great Britain, Sweden, Norway, and the U.S.A. the main departments arrange recruitment; elsewhere it is conducted by central employment offices, personnel offices, staff recruiting centres, and so on. In all cases recruitment is continuous.

In seven undertakings pre-appointment training after selection is given and for wages grades this training is generally on the job, but on some railways there are also courses at training centres. In some cases special courses are held for clerical grades and for operating staffs. Information booklets or rule books are invariably issued to new entrants, and sometimes training is given on the history of the railway concerned, policy, wages, promotion, pensions, medical schemes, and amenities generally. Most managements require probationary periods varying from 14 days in South Africa, for craftsmen, to 3 years for officers recruited directly in India for the Indian railways, and for junior clerks in Denmark.

The South African Railways, which have 111,172 temporary staff out of a total of 179,732, do not appoint non-Europeans to the permanent staff, but in all other undertakings special consideration is given to satisfactory temporary employees when permanent appointments are being made.

Technical Grades

As far as possible, vacancies in the administrative, technical, and supervisory grades are filled from the staff already employed by the undertakings, but certain positions requiring technical and scientific qualifications are filled by recruitment from accredited engineering schools or universities. In no case is there any fixed rate of internal to external recruitment.

British Railways, the Victorian Railways, and the Indian Railway Board endeavour to create pools of qualified men to balance against anticipated vacancies by establishing scholarship apprenticeship schemes and graduate engineering schemes, and also panels of selected candidates for promotion. The administrations in Ceylon, New Zealand, Norway, Sweden, and the U.S.A. also aim to create pools of qualified staff.

Generally speaking, no vacancy is advertised outside when suitable candidates exist within the undertaking, and such candidates are considered in relation to their performance of their existing duties and the recommendations of their superior officers. Outside candidates must submit details of qualifications and references.

Screening tests are carried out by senior officers acting as a board or individually; they involve testing of educational and technical qualifications. Experience, capabilities, general efficiency, and aptitude also are considered. British Railways and the Pennsylvania Railroad conduct preliminary interviews at colleges or universities. No administration holds psychological examinations.

The type of degree or diploma is taken into account in the selection of candidates and this method of filling higher posts is generally preferred to open competitive examinations in that it affords a measure of standardisation and ensures that the candidate is qualified in the field covered by his diploma.

Post appointment training covering stationmasters, goods agents, junior civil, mechanical, and electrical engineering staffs, and draughtsmen is provided by British Railways, London Transport, East African Railways & Harbours, South African Railways & Harbours, New Zealand Government Railways,

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the Indian Railway Board, the Swedish and Egyptian State Railways, and the Southern Railway of U.S.A.

Most administrations recruit and train apprentices, and all recognised crafts and trades are represented. Conditions for admission to apprenticeship include defined age limits ranging from 15 to 21 with extensions for former members of the armed forces on the Atchison, Topeka & Santa Fe and the New York Central systems.

All candidates for apprenticeship must pass a comprehensive medical test and also, on the Danish State Railways, a psychological test. A good standard of education is required and day classes or night classes are provided for further education in most cases. The duration of apprenticeship varies from two to six years with five years as the most usual figure. Six of the organisations replied to the effect that their apprentices are indentured, and thirteen so arrange the training as to fit the apprentices for supervisory positions after they have gained the necessary experience of their trade.

All the administrations (with the exception of the Danish State Railways) have their own medical services and new entrants are medically examined. In addition, employees, mainly those in the operating grades, are required to undergo periodical vision, hearing, and physical tests. On the Danish State Railways a candidate is referred for examination when necessary to a doctor selected by the railway. Standard physical requirements for the duties of the various grades are laid down by all the undertakings, and candidates for permanent positions are given a thorough examination involving a detailed check of heart, lungs, eyesight, hearing, colour sense, and general fitness. Medical examinations for temporary employees are less detailed or waived altogether. Medical officers are employed on a full-time basis by some undertakings.

Age limits for retirement on an obligatory basis vary from 50 years for engine drivers on the East African Railways & Harbours to 70 years or over on some undertakings in the U.S.A. The optional retiring age ranges from 45 on the E.A.R. & H., a temporary arrangement due for review this year, to 65 years in most other administrations.

Only four undertakings were able to give particulars of the average age of retirement by reason of premature unfitness. This ranged from 50 to 53 years. Some examine the reasons why employees leave the service, and take steps to reduce the labour turnover to the lowest possible figure. The general opinion is that a large labour turnover causes economic loss and impaired efficiency.

In most cases, the recruiting system is kept under constant review, and modern developments are constantly studied with a view to their incorporation in the existing systems.

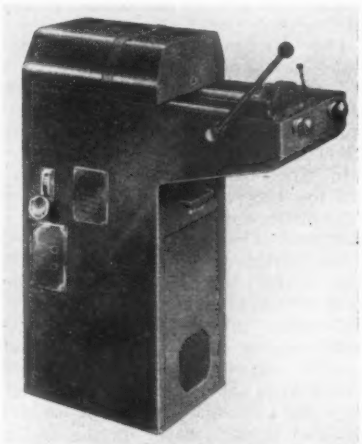
Single-Spindle Screwing Machine

Total enclosure of bolts and fittings; lightweight but robust carriage

THE Staffa ⅜ in. single-spindle screwing machine, manufactured by Chamberlain Industries Limited, of London, E.10, is designed for accurate high-speed threading of bolts, pipes, and small components used in the engineering, building, and allied industries. The pedestal is of fabricated construction, comprising two side panels, pressed-out from mild steel sheets, which form an integral part of the cutting lubricant and swarf cradle, obviating joins in the pedestal construction which would allow cutting lubricants to escape. Small angle sections within the pedestal provide the securing of the side panels, and, with the motor, cutting lubricant reservoir and bearing housing platforms, assure the complete rigidity of construction necessary for precision thread cutting. At the front and rear, removable panels allow complete access to the interior.

The hollow spindle, on which a rotating die head can be fitted, runs in self-lubricating Oilite bearings with thrust washers of the same material to accommodate end loads during cutting operation. Oil nipples in the bearing housing allow periodic oiling of the bearings. A small gear pump, housed within the reservoir, pumps the cutting lubricant. Any leaks from the pump are safely trapped in the reservoir and do not contaminate the driving belts and the pulleys and cause them to slip. The cutting lubricant is delivered on to the work, through the hollow spindle to wash the diehead clean of swarf and keeping both sides of the chasers clean to ensure their maximum cutting efficiency. To seal any oil leaks at the end of the spindle an oil retainer is incorporated in the rear bearing housing. The spindle and lubricant flow control fittings are totally enclosed at the top of the machine by a removable push-on cover. The diehead itself is enclosed by a hinged cover, ensuring cleanliness and complete protection for the operator, against lubricant and revolving components.

Mounted directly under the mouth of the cutting lubricant and swarf cradle is a removable swarf trough, fitted with



Staffa ⅜ in. single-spindle screwing machine

a fine wire-mesh gauge filter. To ensure further filtration before the lubricant is pumped back to the work, the suction pipe of the pump is fitted with a cylindrical wire mesh gauge filter. The reservoir can be drained by a tap in its base. To get rid of sludge which accumulates over a period of years, the complete reservoir and pump can be removed from the machine; access to this equipment is given by the easy removal of a panel in the rear of the machine, secured by Oddie Fasteners which, when released, automatically eject the panel.

Carriage Assembly

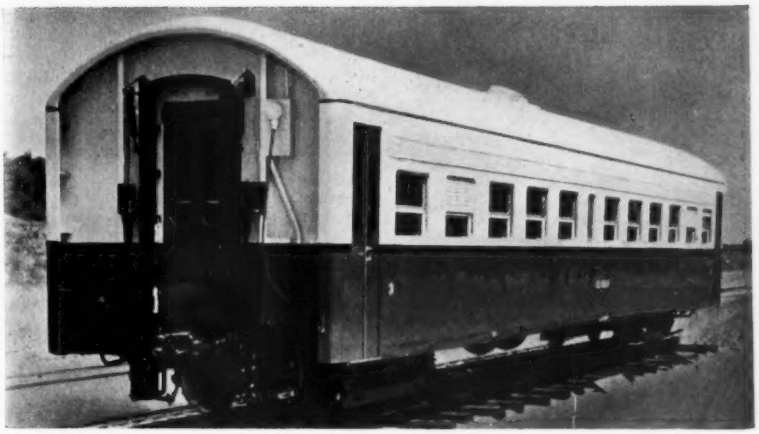
The carriage assembly comprises a flat top table, to which any form of self-centring vice or work holding fixture may be mounted. Although light in weight the carriage is constructed to resist arduous wear and tear. Oilite bushes provide for the frictional wear caused by the sliding movement of the carriage. Two tubular guide bars running the length of the cradle form the slide bed and are extended on either side of the front bearing housing. These bars maintain the correct alignment of the table top horizontally and vertically with the centre of rotation of the machine spindle. Coupled to a simple linkage arrangement positioned at the rear end of the cradle, the forward and return movement of the carriage asembly is controlled by the action of a lever swinging through an arc of 90 deg. No cams, gears, or racks and pinions are used, and the danger of swarf clogging such components is thus avoided. The circular design of guide bars helps to eliminate any collection of swarf.

To predetermine the length of thread to be cut, two screwed shafts with trip adjusting nuts are housed in the tubular slide bars. A crosshead bracket inside the pedestal couples two ends of the screwed shafts together; from it the yoke

(*Continued on page* 297)

New Passenger Stock for Indonesia

Dutch-built design with high ratio of pay load to tare



Third class main line carriages with twin lavatory accommodation built for the Indonesian State Railways

A TOTAL of 45 main-line third class coaches with twin lavatory accommodation has been shipped to the Indonesian State Railways in recent months by the Wagonfabriek Beijnes, of Beverwijk, Holland. They are of steel welded and riveted construction with Isoflex insulation on the inside of the panels. Passenger accommodation is in two large saloons, and entrance doors are narrow double-hinged units at the ends. Ventilation is by three Imperiston ventilators in the roof of each saloon with an extractor of the same make in each lavatory. Lighting is by roof lamps in each saloon plus a small number of side lamps.

The accompanying illustration shows the large space between the tops of the windows and the cantrail. This houses the louvres, which are wound downwards to cover the windows by means of a small handle above each window. Seating is of simple wood and rattan pattern arranged two and three on each side of the central passage, and with the seats supported by vertical tubes which also carry the light-alloy luggage racks.

For the gauge, the bogies have the exceptionally long wheelbase of 8 ft. 10½ in., and this has been combined with flexible bolster suspension through laminated springs, supplemented by twin helical springs for each axlebox, to give an easy-riding carriage. Automatic vacuum brakes with Jourdain-Monneret equipment are fitted, and include two 21-in. cylinders. The generous loading gauge, permitting an overall width of 9 ft. 9½ in., enables 102 seats to be installed, giving a ratio of 3·95 seated passengers per ton of tare.

Single-Spindle Screwing Machine

(*Concluded from page* 296)

of the die-head is automatically controlled. The two trip adjusting nuts on the screwed shafts are positioned on either side of the carriage table, and adjusted inside the slide bars by two control knobs at the front end of the cradle. These knobs are graduated with markings to indicate the length of table movement. The forward and return action of the carriage registering against the trip nuts ensures automatic opening and closing of the diehead.

The drive of the spindle is through a single Vee belt running on an adjustable Vee cone pulley. The variable Dive Assembly is mounted on a quadrant shape bearing and the range of speeds for threading various materials is obtained by adjusting the quadrant.

In the base of the pedestal and mounted on sloping rails is a ¼ h.p. protected electric motor; adjustment for belt tension is readily made by moving the motor up or down the rails. The perforated metal sides of the pedestal allow adequate ventilation of the motor, which is controlled by a flush-mounted direct-on-line motor switch with overload trips, operated by push buttons in the side of the machine.

The absence of outside foundation bolts or pipe fittings enables the operator to walk around the machine without interruption.

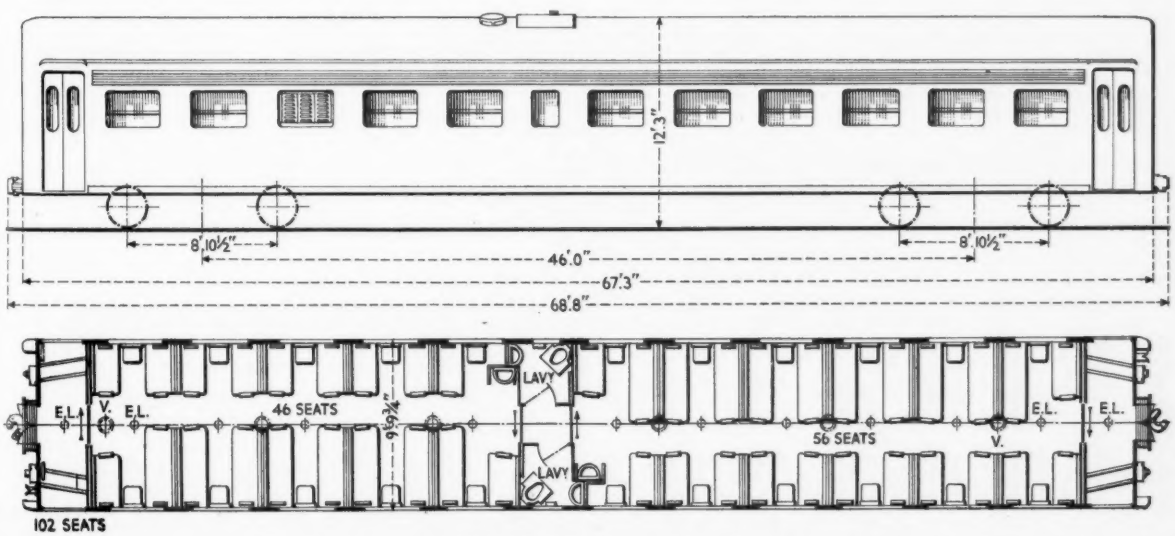


Diagram showing principal dimensions and seating arrangements

Convertible Road-Rail Buses on the German Federal Railway

Experimental operation on a long rural route in Bavaria

Bus traversing the Bodenmais branch

THE German Federal Railway, in collaboration with the Nordwestdeutsche Fahrzeugbau G.m.b.H., Wilhelmshaven, has developed two light convertible road-rail buses for secondary traffic. They are operating in south-east Bavarian rural areas, providing through connections between the termini of branch lines. The daily regular service is worked as follows: from Passau (connecting with the main line services from Regensburg and Austria) on the road to Grafenau, thence on rail via Zwiesel to Bodenmais, on the road again to Kötzting, and finally on rails again via Cham to Furth-im-Wald, the Czech border station, covering a total distance of 121 miles. Travellers avoid making large detours and save travelling time.

Changeover Procedure

The vehicle is a road bus which also may run on rails by placing underneath it, at the front and rear ends, two rubber-sprung bogies, built by Wagon und Maschinenbau, Donauwörth. The rear tyred-wheels perform the driving work on the rails, with a reduced axle pressure of two *tonnes*. Conversion takes only two minutes. At the changeover point two hydraulically-operated, built-in lifting-jacks lift the bus as high up as necessary to allow the bogies to be placed under the vehicle or removed. Passengers need not leave the bus during the conversion.

A self-supporting frameless construction of welded steel and lightweight metal was chosen to impart adequate strength. This type of construction is particularly suitable for the carriage of all the components required for the rail journey, especially the driving and lifting devices. There are two doors on each side, so enabling passengers to alight or enter from the platform on whichever side it is. The doors, when opened, unfold steps.

All wheels have single tyres. The rear wheels are fitted with tyres of special profile, with broad surface, for the use on rails. There is an air-pressure-operated sanding device and a second reversing speed gear for speedier rail shunting movements, allowing a maximum reverse speed of 25 m.p.h. The bogies are fitted with air-pressure disc brakes of Westinghouse type. The steering wheel is fixed while the bus runs on rails. From experience so far gained it is expected that the lifetime of the rear tyres will be not less than that of any normal road tyre.

The comparison of the vehicle with normal road buses shows little difference in outer appearance. The particulars of the convertible buses are :—

Length (overall)	11 m.
Width	2·5 m.
Height	2·86 m.
Floor height above rail ...	0·950 m.
Axle pressure (front) ...	5·6 *tonnes*
Axle pressure (rear)	5·8 *tonnes*
Weight (unladen)	7·52 *tonnes*
Capacity	3·88 *tonnes*
Seating capacity	43
Standing accommodation ...	17
Turning circle	12 m.
Diesel engine output	120 h.p.
Fuel consumption on rail ...	20 litres (50 m.p.h.)
Heating system	Webersto bus oil-heating
Transmission	5-speed-gearbox (Zahnradfabrik Friedrichshafen)
Engine	Klöckner-Humboldt-Deutz diesel (air-cooled)

The buses have been in continuous public service since June 8, 1953. The operation, although fully satisfactory, is still considered to be experimental. For the present, two men are appointed to each vehicle, one acting as a road driver, and the other as driver while the bus is running on rails. The scheme necessitated alteration of track-circuit

Bus jacked up to receive front bogie at road-to-rail changeover point

contacts, because of the reduced wheel pressure.

The cost for the present monthly average performance of 30,000 miles is about 3s. per mile and per bus, including the cost of a crew of two on each bus. The investment cost is about 30 per cent of the total. Fuel, tyres, maintenance and spare parts amount to 20 per cent of the total cost. If there were one-man operation the cost might be reduced by 25 per cent.

The maximum speed of which the buses are capable is 120 km.p.h. (75 m.p.h.), but this capability, however, cannot be made full use of because of the severe curvature and grading of the roads, some of which are also narrow. The railway lines involved include gradients of 1 in 27. As they have many unguarded level crossings, a warning bell is fitted.

It is intended to introduce one-man operation as soon as possible, but the driver would have to be trained for both rail and road operation. Another development in view is a bus not requiring special bogies. It is planned to use one-axle convertible trailers, for baggage and goods.

Alkaline Headlamps for Locomotive Maintenance Staff

Nife batteries installation at North Eastern Region depot

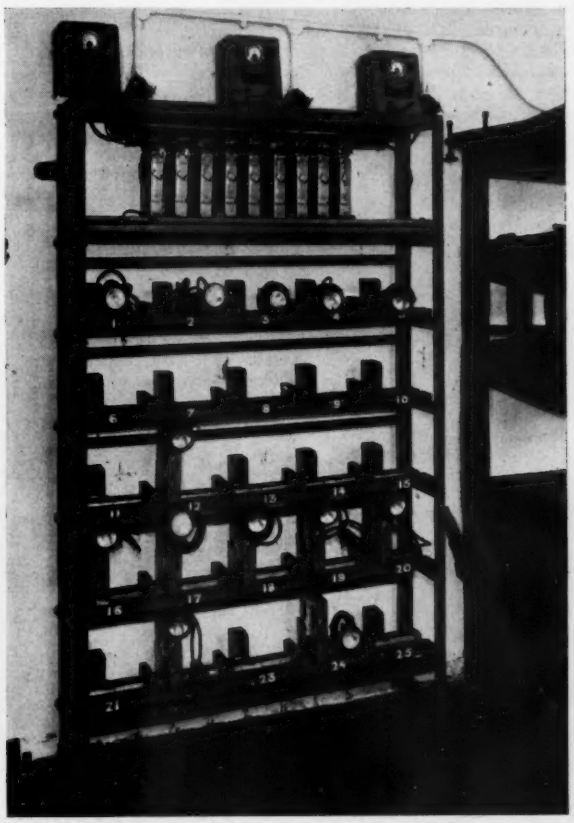
DURING extended trials under working conditions at Dairycoates Motive Power Depot, Hull, North Eastern Region, the NC113C alkaline battery headlamp made by Nife Batteries, Redditch, has proved most popular with the maintenance staff for general inspection and repair work in the locomotive sheds.

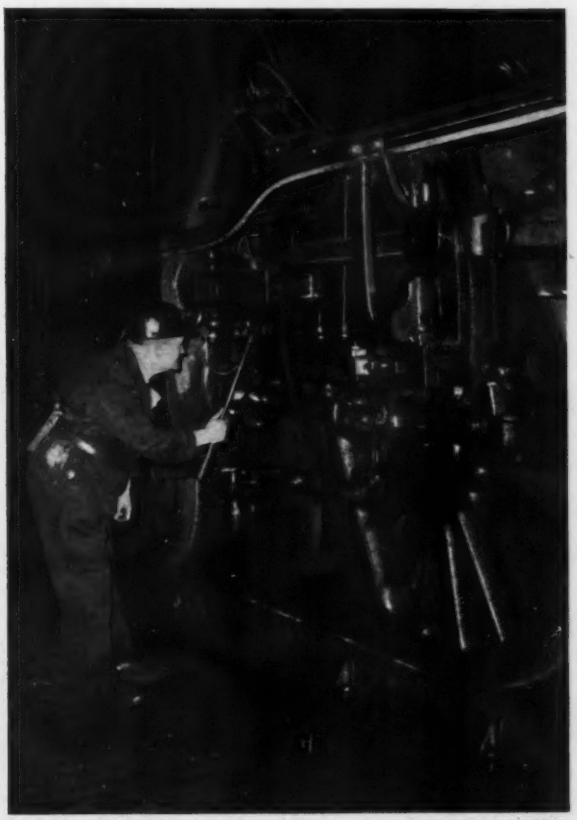
Installed with the associated charging equipment, in September, 1952, the 25 headlamps at Dairycoates have replaced the acetylene lamps with which supervisors, mechanical foremen, examining and chargehand fitters were formerly equipped. In service 24 hr. a day, they have proved themselves to be considerably more convenient and completely trouble free.

The powerful and flickerless light provided by the headlamp is one of its advantages. Equally important is the fact that the beam automatically follows the wearer's line of vision and yet leaves both hands free. This has been shown to speed up considerably the routine jobs of inspection, maintenance and fault finding.

Worn in the orthodox position on a miner's type helmet, the headlamp is powered by a three-cell Nife nickel-cadmium alkaline battery encased in heavy-gauge stainless steel and carried at the side on a simple leather harness. The 5¼ oz. toughened plastic headpiece houses the main high efficiency 1·0 amp. Krypton gas-filled bulb and a smaller 0·3 amp. pilot bulb to conserve battery power in an emergency. The battery, free from self-discharge, has the capacity to provide 10 hr. continuous lighting on the main bulb.

The charging apparatus installed in the stores at Dairycoates consists of three standard Nife chargers mounted above a specially designed rack in which the lamps are kept ready for use. Up to nine batteries can be charged simultaneously and it has been found that one full charge is, on an average, sufficient for every two eight-hour shifts.





(Left) charging and storage racks, and (right) examiner equipped with Nife headlamp inspecting slide bar bolts at Dairycoates Motive Power Depot

Burdekin River Bridge, Queensland

New 3,600-ft. high-level concrete and steel structure replacing low-level railway bridge subject to inundation

Flood debris packed against existing timber trestle bridge

WORK began in April, 1947, on construction of the new high-level bridge over the Burdekin River between Ayr and Home Hill, just south of Townsville, on the Queensland Government Railways, and described in our issue of September 2, 1949.

Substructure work for the southern approach viaduct and main channel piers is now complete and that on the northern bank is in its final stages. The length of the bridge between abutments is over 3,600 ft., and it consists of ten 250-ft. main spans, with three 60-ft. and eight 45-ft. approach spans on each side of them. The main piers are founded on caissons sunk to about 100 ft. below the river bed, and the caissons and piers are of reinforced concrete.

Each caisson is 56 ft. long × 25 ft. or 18 ft. wide and has semi-circular ends, five internal dredging wells, and walls 2 ft. 6 in. thick; the steel cutting curb weighs 12½ tons. Sinking was by open dredging with 2 cu. yd. clamshell grabs, worked with electric cranes; it was assisted by pumping and in some cases by considerable kentledge, consisting of 800 tons of boxes of sand.

The season for work in the river bed is limited to the months May-December, when there is only a narrow channel near the north bank. It was therefore possible to set the well curbs on sleepers laid on the bed and to build up the concrete on them to a height of 15 ft. The sleepers were then carefully removed allowing the curbs to sink into the sand a short distance before the start of dredging.

Use of Caissons

When sinking had been completed to full depth, each caisson was sealed by a tremie concrete plug 7 ft. thick, poured through a 9-in. tremie tube, at a depth of about 95 ft. under water; this required 240 cu. ft. of concrete. After pumping out and inspection, another 7-ft. plug was poured before refilling with water. There are 2,400 cu. ft. of concrete in each caisson, and 785 ft. in each hollow pier. Divers had to work daily at depths of down to 100 ft. under water on this job, and though a medical lock was provided, it was only once required to deal with a slight attack of " bends," so well organised was the diving, carried out strictly to rule.

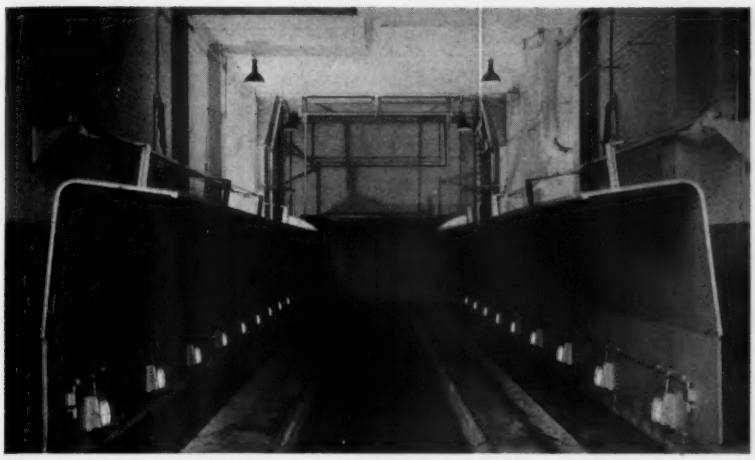
The main spans, consisting of through steel trusses spaced at 42-ft. centres, are designed to carry a single 4 ft. 8½ in. gauge line of railway with Cooper's E.60 loading, and a 22-ft. reinforced concrete roadway, side by side. The 60-ft. and 45-ft. approach spans are supported by reinforced concrete piled piers except the piers nearest to the main spans which are founded on small caissons; the girders are steel joists.

GABRIEL & CO. LTD. LONDON OFFICE.—Gabriel & Co. Ltd., manufacturers of metallic fittings for passenger transport vehicles, of A. B. Row, Birmingham 4, have opened an office in London at 30, Ashley Place, Victoria Street, London, S.W.1. The telephone number is Tate Gallery 1517. Mr. J. Cave is in charge.

Timber bridge on extreme left, with train crossing ; in centre, reinforced concrete piers for the new bridge

Cleaning of Electric Rolling Stock Underframes

Compressed-air equipment at Acton Works, London Transport, for removing dust before overhaul



General view inside the shop, showing screens, end doors, and sealing curtain

FOR some time the London Transport Executive has used compressed air for the removal of dust from the underframes of electric underground rolling stock at its Acton Works. Recently new equipment has been installed for this purpose embodying the latest principles employed in dust removal and extraction.

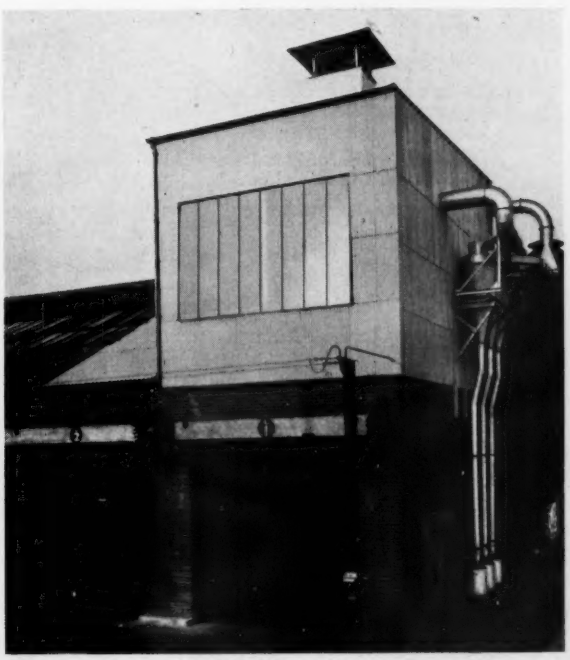
When an underground car arrives at Acton Works for overhaul, all loose equipment is removed and the body lifted from its service bogies on to the accommodation bogies on which it rests throughout all stages of overhaul. These bogies are of sufficient height to enable work to be conveniently carried out on the underside of the car and on the electrical and other equipment carried beneath it.

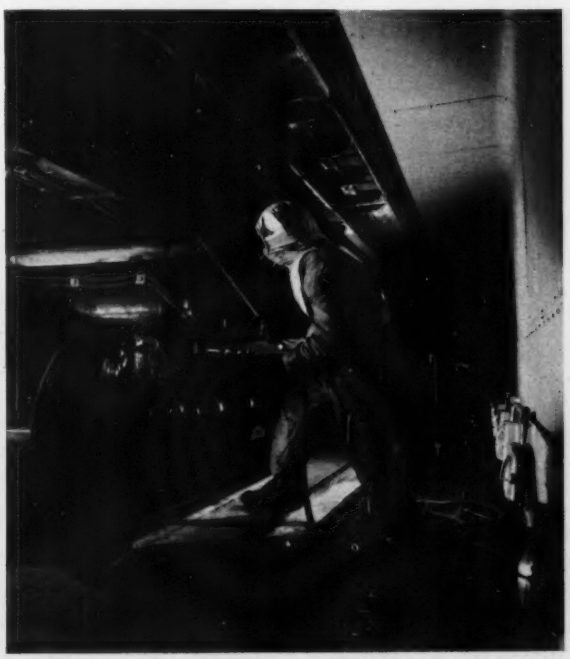
The first operation is to remove by jets of compressed-air the accumulation of dust on the underframe and suspended equipment, an operation performed in an enclosure through which air is drawn to carry away dust dislodged by the jets. This principle has been employed for a long time, but the recent construction of a new blowing-out shop has afforded the opportunity of introducing various improvements, notably in regard to the speed of the draught, the separation of dust particles from the air stream before discharge to atmosphere, and the sealing of the enclosure in which the operation is performed.

The car body, on its accommodation bogies, is drawn by a flush-type haulage chain into the blowing-out shop, where pneumatically-operated side-screens, shaped to permit operators to work comfortably beneath them, are moved into contact with the lower side panels of the body. Doors are closed across one end of the body and an electrically-actuated curtain, suspended from the ceiling of the shop, seals the space between the end-doors and the end of the car body.

Cleaning Process

Pits, covered by steel gratings, are provided between and outside the rails to collect heavy dirt which falls during the cleaning process. The portion of these pits immediately inside the end-doors includes a transverse duct which communicates through twin vertical uptakes with the suction plant. The side-screens, end-doors, underside of the car and floor gratings thus form a wind tunnel.





Exterior (left) of building, showing car body in position for cleaning, and its dust separator equipment; (right) car underframe in process of being cleaned by compressed air

The cleaning process starts at the open end of this tunnel, the operators moving along it while directing jets of compressed air on to the underframe and equipment; in this way the operators work in clean air, the dust being carried before them by the induced air stream which has a speed of the order of 10 m.p.h. The working space is provided with lighting fittings on the side-screens at a height to ensure best illumination of the parts to be cleaned.

The dust-laden air passes from the tunnel through the transverse floor duct into the vertical uptakes and is carried to the aerodynamic dust collector. This contains a number of slotted cones through which air is drawn by the primary fan, which has a capacity of 80,000 cu. ft. per min. The effect is to concentrate the dust-laden air at the narrower ends of the cones, and a secondary circuit, comprising a fan and a group of enclosed centrifugal separators, is provided by which the dust is withdrawn and deposited in bins at ground level.

The discharge from the secondary fan is re-introduced into the primary air stream. The aerodynamic dust collector, with the fans, motors, and control gear, are mounted at high level above an adjoining shop.

All parts of the equipment are electrically interlocked, to ensure the proper sequence of movements in preparation for the blowing-out process and subsequent removal of the car body; only when screens, doors, and so on are in their proper positions, and exhaust fans running, is compressed-air delivered to the cleaning jets. The suction plant, comprising aerodynamic dust collector, exhaust fans, and high level ductwork, was supplied and erected by Musgrave & Co. Ltd. to the specification of the London Transport Executive, which carried out the design and construction of the interior equipment of the shop and associated building alterations.

New Bridge at Shifnal, Western Region

New deck-type spans carrying Western Region main line over Market Place, Shifnal (see article in our February 19 issue)

Bridge viewed from road level; it replaces a cast-iron arch built in 1849

RAILWAY NEWS SECTION

PERSONAL

At the Annual Luncheon of the Institution of Locomotive Engineers on Friday last, Mr. R. C. Bond, President, announced that his successor in office would be Mr. A. Campbell, C.B.E., Chief Mechanical Engineer, Crown Agents for the Colonies.

Mr. P. C. Mukerjee, M.A. (Cantab). M.I.E., of the Indian Railway Service of Engineers, who, until his appointment as General Manager of the Eastern Railway on February 1 this year was General Manager of the Indian Railways Locomotive Works at Chittaranjan, was born in October, 1904. He was educated at the Krishnagar Collegiate School, the Hastings House, Calcutta, and Clare College, Cambridge. Mr. Mukerjee began his career in the Engineering Department of the East Indian Railway, where he held a number of posts. Apart from being in charge of the construction and other engineering works at different places on the line, he was Employment Officer of the Workshops and Personnel Officer both in the Divisions and at Headquarters. During the 1939-45 war his services were requisitioned for the Department of Munitions Production, where he successively held the posts of the Deputy Director, Director, Civil Engineering, and Deputy Director-General (Engineering). In 1946 he was appointed Controller of Railway Supplies with the Railway Board; he was also Deputy Director-General (Development) with the Indian Government Industries & Supplies Department. Mr. Mukerjee returned to the East Indian Railway in 1947 as Deputy General Manager (Works), and, after a brief spell of service as Divisional Superintendent, in April, 1948, he took over as the General Manager, Bengal Nagpur Railway. In 1949 he became the first General Manager of the Chittaranjan Indian Railways Locomotive Works.

Mr. Karnail Singh, General Manager, Northern Railway, India, who, as recorded in our March 5 issue, has been appointed General Manager of the Chittaranjan Locomotive Works, was born in July, 1904. He graduated from the Thomason Engineering College, Roorkee, and joined the Indian Railway Service of Engineers on the North Western Railway in 1927. He was subsequently engaged on surveys, construction works, and a number of special works, including the Quetta Earthquake Reconstruction. Mr. Singh played an important part in the construction of the Hindubagh-Fort Sandeman Extension of the Zhob Valley Railway in Baluchistan (1929-30). Towards the end of the 1939-45 war, he was on special duty as Deputy General Manager, Rehabilitation & Development, later taking charge of the surveys in the North Western Frontier Provinces and the Punjab. He was also responsible for the construction of a 34-mile railway line from Rupar to Talaura for the Bhakra Dam, and the Nangal projects. Immediately after Partition, Mr. Singh was appointed as Transfer Officer with headquarters at Lahore, Pakistan. In 1947 he received the appointment of Engineer-in-Chief of the Assam Rail Link Project. A short period of service subsequently as Senior Deputy General Manager of the Central Railway, India, preceded his appointment as the first General Manager of the Northern Railway in 1952.

Photo] *[Indian Railways*

Mr. P. C. Mukerjee

Appointed General Manager, Eastern Railway, India

Mr. Karnail Singh

Appointed General Manager. Chittaranjan Locomotive Works, India

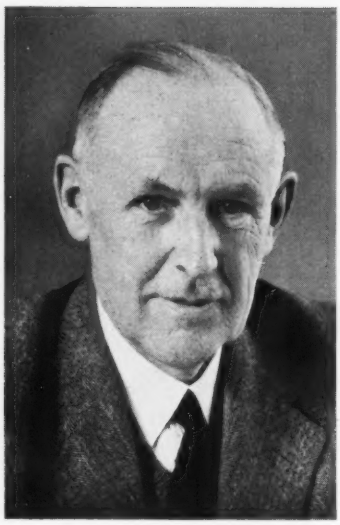
The following appointments have been announced by Western Region, British Railways:—

Mr. H. H. Phillips, A.C.I.S., M.Inst.T., Assistant Chief Regional Manager.

Mr. H. G. Bowles, Principal Assistant to the Chief Regional Manager.

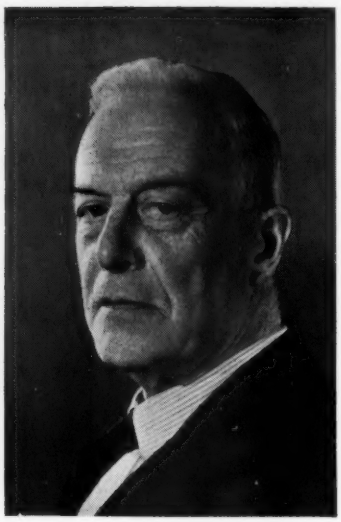
Mrs. E. H. Gasking, O.B.E., and Mr. R. T. Laughton, C.B.E., have consented to serve in an advisory capacity on the British Transport Commission's Hotels & Catering Services Committee, under the Chairmanship of Sir Harry F. Methven, K.B.E. The Committee, which includes Members of the Commission, has been set up to assist the Commission in dealing with matters relating to British Transport Hotels & Catering Services. These services are under the management of Mr. F. G. Hole.

Mrs. Gasking was a Member of the Hotels Executive until its abolition in September, 1953, and Mr. Laughton is Managing Director of the Royal Hotel (Scarborough) Limited.



Mr. F. W. Abraham
Motive Power Superintendent, L.M. Region, 1948-54

Mr. S. T. Clayton
Appointed Motive Power Superintendent, L.M. Region, British Railways

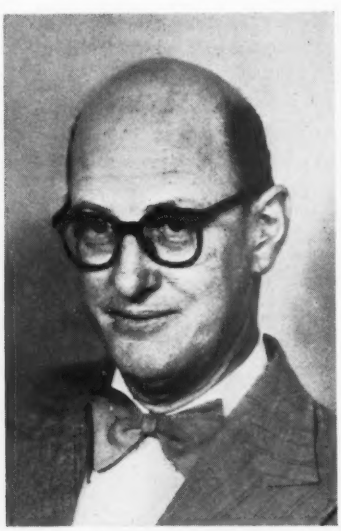


The late Mr. S. B. Carter
Outdoor Superintendent for the Chief Commercial & Chief Operating Managers, L.M.S.R., 1932-43

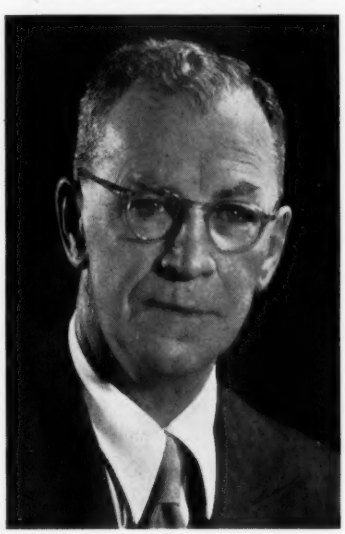
Mr. F. W. Abraham, O.B.E., Motive Power Superintendent, London Midland Region, who, as recorded in our March 5 issue, retired from the service at the end of February, was educated at Dover College. He joined the Great Western Railway in 1905, serving his pupilage at Swindon Works until 1911, when he joined the Midland Railway and became an improver at Derby running shed. In July, 1912, Mr. Abraham was appointed Shed Foreman at Kettering, and later in the same year, Acting District Locomotive Superintendent, Worcester. He was appointed in the same capacity in 1913 to Derby, and, in 1914, to Plaistow. In the 1914-18 war he saw active service with H.M. Forces from November, 1914, until July, 1919, serving first as a captain in the Railway Transport Establishment in France, and later as a major in command of a field battery in the R.F.A. In 1919, Mr. Abraham returned to Plaistow as District Locomotive Superintendent, a position he held until 1929, when he was appointed to Assistant to the Superintendent of Motive Power, Manchester. He was appointed in the same capacity to Derby in 1933, and to Euston in 1934. He became Assistant Divisional Superintendent of Operation, Manchester L.M.S. (Central Division) in 1934, and, in January, 1940, was appointed Assistant Divisional Superintendent of Operation, Crewe (Western Division). He became Assistant Superintendent of Motive Power, L.M.S.R., in July, 1943, and Motive Power Superintendent, London Midland Region, in 1948. Mr. Abraham was awarded the O.B.E. in the Coronation Honours of 1953. He is a member of the Institution of Locomotive Engineers and has been connected with the old L.M.S. and present L.M.R. Sectional Council No. 2 since 1934, becoming the Chairman of the Management Side of that body in 1948. With the retirement of Mr. Abraham, the railway service loses not only an outstanding Motive Power Superintendent, but one who by his regard for those under him made friends everywhere, and he will long be remembered for his extensive knowledge of railway matters, his geniality and tact in resolving the most difficult problems.

Mr. S. T. Clayton, M.I.Loco.E., Assistant Motive Power Superintendent, London Midland Region, British Railways, who, as recorded in our February 12 issue, has been appointed Motive Power Superintendent, London Midland Region, Euston, entered the service of the former Lancashire & Yorkshire Railway as an apprentice at Horwich Works in 1909. He served with the 51st Highland Division in France during the 1914-18 war from November,

Mr. G. F. Johnston
Australian Traffic Manager, C.N.R., 1936-54



Mr. D. R. Crawford
Appointed Australian Traffic Manager, Canadian National Railways



Mr. T. A. Donovan
Appointed General Purchasing Agent, Canadian Pacific Railway

1914, to April, 1916, when he was discharged after being wounded in action. He returned to the L. & Y. R. in 1916 at Wakefield, and subsequently served at Low Moor (Bradford), Sowerby Bridge and Lower Darwen Motive Power Depots. In 1928, Mr. Clayton was appointed Assistant District Locomotive Superintendent, Carlisle, L.M.S. He became Chairman of the Locomotive Analysis Committee, Midland Division, L.M.S., in 1934; Utilisation Assistant, Divisional Superintendent's Office, Manchester, in 1935, Maintenance Assistant, Divisional Superintendent's Office, Derby, in 1937, and, in the following year, was appointed District Locomotive Superintendent, Bank Hall (Liverpool). Mr. Clayton became District Locomotive Superintendent, Rugby, in 1940 and, from then until 1943, when he was appointed District Locomotive Superintendent, Polmadie, he took an active part in the Home Guard organisation with the rank of Major in the 7th Battn. Royal Warwickshire Regiment. In 1945, he was appointed General Assistant (Motive Power) to the Operating Manager, Northern Division, L.M.S., Glasgow, and, on January 1, 1949, he became District Motive Power Superintendent, Glasgow (North), Scottish Region, British Railways. In February, 1949, he was appointed Assistant Motive Power Superintendent, London Midland Region, which position he now vacates to take up the position of Motive Power Superintendent on the same Region. Mr. Clayton became an associate member of the Institute of Locomotive Engineers in 1919, and a member in 1938.

We regret to record the death on February 27, at the age of 71, of Mr. Stanley Bronislaw Carter, O.B.E., Outdoor Superintendent for the Chief Commercial & Chief Operating Managers, London Midland & Scottish Railway, from 1932 to 1942. Mr. Carter, who was born on July 9, 1882, was educated at Fettes College, Edinburgh. He entered the service of the London & North Western Railway at Bushey as a probationer on January 1, 1900. After gaining experience he was appointed Outdoor Assistant to the Superintendent of the Line at Euston on August 1, 1904. He became an Assistant to the Superintendent (Traffic), Manchester Exchange, on July 1, 1909, and became District Superintendent, North-Eastern District, Manchester, on October 1 of the same year. In 1914, he went to Liverpool to take charge of the Northern District. During the 1914-18 war he had control of the entrainment and despatch of all troop landing at Liverpool, including the American Army, for all the railway companies then serving the port, and, in 1920, he was created an Officer of the British Empire for his work during that period. On January 1, 1922, he was appointed District Passenger Superintendent, Liverpool, and became Assistant to the General Superintendent (Western Division), Manchester, on January 1, 1923, on the amalgamation of the L.M.S. He was appointed Divisional Superintendent, Liverpool, on August 1, 1924, and became Outdoor Assistant to the Chief Operating Manager, Derby, on January 1, 1927, and Outdoor Superintendent (Chief Operating Manager's Department), Derby, on October 1, 1932. On March 5, 1934, he was appointed Outdoor Superintendent to the Chief Commercial & Chief Operating Managers (New Works —Accommodation & Private Sidings), and retired from that post on March 31, 1943.

Mr. G. F. Johnston, Australian Traffic Manager at Sydney, Australia, Canadian National Railways, who, as recorded in our February 26 issue, has retired, has played an important part in developing trade and travel between Australia and Canada over the past 32 years. Mr. Johnston, who was born in Richmond, Quebec, began his 44-year railway career there in 1909, as a clerk with the C.N.R. He subsequently held a number of positions, including those of Assistant City Passenger & Ticket Agent at Regina and City Passenger & Ticket Agent at Prince Rupert, before being appointed General Agent in Sydney, Australia, in 1922. He became Australian Traffic Manager in 1936.

Mr. Douglas R. Crawford, General Agent in Melbourne for the Canadian National Railways, who, as recorded in our February 26 issue, has been appointed Australian Traffic Manager for the C.N.R. at Sydney, succeeding Mr. G. F. Johnston, has made a number of study tours of Canada during more than 28 years railway service and has acquired a wide knowledge of Canadian trade and travel matters. A native of Enoggera, Queensland, Australia, he joined the Canadian National steamships as Agent at Brisbane in 1925. He was appointed Manager of the C.N.S. in Melbourne in 1931 and General Agent there in 1936.

Mr. Thomas A. Donovan, whose appointment as Acting General Purchasing Agent, Canadian Pacific Railway, was recorded in our October 2, 1953, issue, and who has since been confirmed in that position, was born at Canterbury, N.B., Canada, on August 3, 1897, and educated at public schools and at St. Joseph's College, Memramcook, N.B. He entered the service of the C.P.R. in 1912, since when he has held the following positions in the Purchasing Department: office boy, junior, and clerk, Chief Clerk, Calgary (1918); Chief Clerk, Montreal (1928); Purchasing Agent, Saint John, N.B. (1930); Acting Purchasing Agent, Toronto (1939); Purchasing Agent, Toronto (1941); Purchasing Agent, Calgary (1947); Assistant to General Purchasing Agent, Montreal (1950); and Assistant General Purchasing Agent, Montreal (1952).

Mr. Harry Arkle, General Freight Traffic Manager, Canadian Pacific Railway, Montreal, has been appointed European General Manager of the company. The appointment takes effect from April 1. Mr. Arkle fills the vacancy caused by the death of Mr. J. C. Patteson in January.

Mr. T. B. Andison, F.C.I.S., M.Inst.T., Secretary & Registrar of the Ulster Transport Authority, is retiring at the end of this month.

Mr. R. W. Foxlee, C.M.G., C.B.E., M.Inst.C.E., Engineer-in-Chief, Crown Agents for the Colonies, is retiring. He will be succeeded by Mr. R. W. Taylor, C.M.G., B.Sc.(Eng.), A.M.Inst.C.E., Director of Public Works, Kenya.

Dr. L. Douglas, Assistant Chief Mechanical Engineer (Workshops), South African Railways, Pretoria, has been appointed Chief Mechanical Engineer, Pretoria.

Mr. J. R. Naisby, Commercial Representative, London, South African Railways, returns to this country today, Friday, after a two-month visit to South Africa.

We regret to record the death on March 6, at the age of 77, of Mr. Alfred James, formerly Chief Mechanical Engineer, Assam Bengal Railway. The funeral took place at Brightstone Parish Church on Tuesday, March 9.

We regret to record the death, on February 20, in his 81st year, of Mr. Edward Murton Bywell, Curator of York Railway Museum. Mr. Bywell's railway career began in September, 1889, in the office of the Divisional Goods Manager, North Eastern Railway, Newcastle. In 1911 he transferred to the General Manager's office at York as sub-editor of the North Eastern Magazine, which, with the York Railway Museum, was the twin love of his working life. Mr. Bywell's connection with the museum dated from its inception in March, 1922, when he became Honorary Curator. After his retirement from active railway service in 1938 Mr. Bywell continued to act as Curator; and much of the York Railway Museum's present popularity is a direct result of his able administrative gifts and wide knowledge of the railway affairs of early days.

The Minister of Labour & National Service has appointed Mr. Frank Gilbert, O.B.E., Principal Staff Officer, British Transport Commission, to be a member of the Licensed Residential Establishment & Licensed Restaurant Wages Board.

Captain F. C. Raven, M.B.E., District Marine Manager & Harbourmaster at Heysham, London Midland Region, British Railways, is retiring this month. He will be succeeded by Captain A. E. Willmott.

Mr. A. E. Record, who has been acting as Staff Assistant to the Mechanical & Electrical and Carriage & Wagon Engineers, London Midland Region, British Railways, has been confirmed in that position.

Mr. H. S. Crosthwaite, Assistant District Operating Superintendent, Darlington, North Eastern Region, British Railways, has been appointed District Operating Superintendent, Leeds Central.

Mr. W. B. S. Miller, B.A. (Eng.), (Cantab.), Assistant District Engineer, Doncaster, North Eastern Region, British Railways, has been appointed District Engineer, Hull.

Mr. Hubert Bolton, District Commercial Superintendent, Bristol, Western Region, British Railways, is retiring on March 29 after over 50 years of railway service.

The Senate of the University of Sheffield has appointed Dr. A. R. Entwisle, a graduate of the University of Cambridge, who for some time has been engaged in metallurgical research in Sheffield, to be the first United Steel Companies' Research Fellow in Metallurgy.

R.O.D. Officers' Dinner

The annual reunion dinner of the Royal Engineers (Railway Operating Division) was held at the Transportation Club, 44, Wilton Crescent, S.W.1, on March 3. Sir Michael Barrington-Ward presided. Among the officers and guests present were:—

Messrs. J. Clubley Armstrong, F. L. Castle, B. W. C. Cooke, M. W. Crosthwaite, R. Horsfield, S. E. Parkhouse, E. W. Rostern, K. R. N. Speir, Brigadier W. G. Tyrrell.

XUM

Institution of Locomotive Engineers Annual Luncheon

Record gathering addressed by Sir Brian Robertson: the B.T.C. and the British locomotive building industry

The annual luncheon of the Institution of Locomotive Engineers was held at the Dorchester Hotel, London, on March 5, with Mr. R. C. Bond, President of the Institution, in the chair. Sir Brian Robertson, Chairman of the British Transport Commission, was the principal guest. Over 700 members and their guests were present, a record number.

Sir Brian Robertson, proposing the toast of "The Institution," reminded his audience that it was over 40 years since the Institution was founded, and that it was concerned with various types of traction, and not only steam. He emphasised the importance of the work of locomotive engineers to nationalised transport, where maintenance of efficient motive power, good design, and the choice of the right type of motive power, were vital. The British Transport Commission, he added, would need the help and counsel of locomotive engineers.

Private Manufacturers

He was glad, he went on, to meet at this function the private manufacturers of locomotives. The Commission appreciated the importance of the British locomotive building industry in the export market, and would show this appreciation when it could.

The growth of the Institution, Sir Brian Robertson added, was a sign of vigour.

Mr. R. C. Bond, replying to the toast, pointed out that the number present at the luncheon, over 700, was a record. He emphasised the wide scope of the subjects covered by the Institution, which was reflected in the positions occupied by its Presidents; as examples he cited the immediately preceding Past President, Mr. C. M. Cock, an electrical engineer; his predecessor, Mr. Julian S. Tritton, a member of a firm of consulting engineers; and himself, a steam locomotive engineer, and would refer also to the President-elect for the coming year, Mr. A. Campbell, Chief Mechanical Engineer of the Crown Agents for the Colonies.

Mr. Bond emphasised the good relations between the Institution and the British Transport Commission, shown in the invitation to himself to join the Committee of Honour of the International Railway Congress next May.

This was a British Railways occasion, Mr. Bond said. He welcomed the presence of Members of the British Transport Commission and of the Chief Regional Managers of four of the Regions of British Railways.

Changes in British Railways Organisation

The changes made in the organisation of nationalised transport under the Act of 1953, would, he believed, be for the good. Scientific principles, however, did not change. It was not desirable to sacrifice the benefits gained in the six years since nationalisation of the railways in 1948. Sir Brian Robertson, he went on, in his speech the previous week at the annual dinner of the Institute of Transport, had deprecated reversal of the principle of the unification of the railways. That, Mr. Bond commented, would certainly be foolish in the sphere of mechanical engineering.

He wished to pay a tribute to Mr. W. A. Agnew, a Past President, and to Mr. W. G. Hornett, a Member of Council, for their valuable services in revising the articles of association of the Institution. The Indian centre, he said, had been resuscitated, and would be useful work. A new centre had been set up in Rhodesia.

Mr. Bond then expressed the thanks of all concerned to those whose work had made the luncheon a success, and notably to Mr. G. T. Hart, Secretary, and to Miss J. M. Johnson, Assistant Secretary of the Institution.

Sir William Stanier, proposing "The Guests," welcomed the presence of so many men eminent in the world of transport, including, Sir John Benstead, Deputy Chairman of the B.T.C.; some of the Chief Regional Managers of British Railways; Sir John Elliot, Chairman of London Transport Executive and President of the Institute of Transport; Sir William Wood; Mr. John F. Alcock, President of the Locomotive Manufacturers' Association; Mr. W. P. Shepherd-Barron, President of the Institution of Civil Engineers; and Mr. T. Austin, President of the Institution of Railway Signal Engineers.

Mr. W. P. Shepherd-Barron in reply thanked the Institution on behalf of the guests, and expressed his admiration of the high standard of the Institution's technical publications.

Mr. Bond then introduced Mr. A. Campbell as the next President of the Institution. Mr. Campbell thanked the Members of the Institution for the confidence they had shown in him, and said that he would do his utmost to further the work of the Institution.

Among those present were :—

Messrs. G. E. Abbott, F. W. Abraham, E. Adams, J. M. Adams, W. M. Adey, W. A. Agnew, J. F. Alcock, T. J. Aldridge, L. B. Alexander, R. M. Allen, W. F. Allen, E. Allsop, C. G. Anderson, L. Anderson, R. J. Anderson, L. B. Andrew, B. W. Anwell, R. Arbuthnott, J. Clubley Armstrong, S. V. Arnold, W. J. Ash, L. V. Athron, C. P. Atkins, T. Austin,

Messrs. H. Badger, A. E. Baker, B. Baker, E. W. Baker, S. E. Baker, C. Balakrishnan, F. J. Bance, S. Barber, H. P. Barker, D. S. M. Barrie, W. A. Bartley, R. Bate, A. E. Bates, A. E. Beacham, R. W. Bean, F. H. Besant, J. E. Beckett, R. A. Beckett, G. V. Beesley, Miles Beevor, M. A. H. Bellhouse, H. Bennett, J. P. Bennett, S. W. Bennett,

Sir John Benstead, Mr. A. D. Benton, Sir George Beresford-Stooke, Messrs. A. W. Berry, G. F. E. Best, S. J. Billett, G. S. Bingham, G. Binnie, C. K. Bird, Commander W. T. Bird,

Messrs. R. W. Black, C. N. Blakeney, A. W. Bloomer, R. W. Boardman, R. C. Bond, A. B. Boath, E. S. Booth, R. Bower, H. G. Bowles, E. Bowyer,

Sir Leslie Boyce, Sir Archibald Boyd, Messrs. C. O. Boyse, J. K. Bridcut, Viscount Bridgeman, Messrs. A. C. Brierly, H. E. Bristow, W. B. Broadbent, J. Brooke, Kendall Brooke, J. A. Broughall, A. J. S. Brown, E. R. Brown, G. Brown, H. Brown, J. G. Bruce, P. J. M. Buchanan, W. G. Buchanan, H. R. Buckland, C. Bullard, E. Burford, H. Burley, M. G. Burrows, S. C. Burt, D. C. Burton, F. B. Butler, H. L. Butler,

Messrs. N. G. Cadman, J. Calderwood, J. E. Calverley, A. Campbell, J. H. Cansdale, K. Cantlie, E. J. Card, L. A. Carter, N. C. Carter, S. G. Carter, H. R. Carver, H. G. Caterall, J. Cave, Colonel V. A. Cecil, Messrs. C. W. Challis-Sowerby, J. W. P. Chalmers, W. W. A. C. Chalmers, D. G. Chapman, E. E. Chapman, M. R. Chapman, T. W. Charlesworth, H. Cheetham, T. E. Chrimes, Colonel H. E. Clark,

Messrs. H. G. Clark, E. Claxton, S. T. Clayton, C. F. Cleaver, A. Clegg, C. M. Cock, D. Cockburn, C. Cocks, F. H. Colebrook, T. F. Coleman, A. F. Collins, C. E. Collins, W. B. G. Collis, J. N. Compton, A. E. Cook, K. J. Cook, L. S. Cook, B. W. C. Cooke, J. Cooke, E. C. Cookson, D. F. Cooper, R. S. Cooper, S. E. Coppen, A. G. Corrie, P. Corrie, G. J. Corson, H. P. R. Coveney, E. S. Cox,

Sir H. Roxbee Cox, Messrs. J. Craig, M. A. Crane, L. A. G. Creighton, W. N. Crimp, R. Croft, J. Crook, O. J. Crompton, W. G. Cross, H. W. Crosthwait, N. Croucher, T. A. Crowe, H. A. Cruse, J. H. Currey, G. R. Curry, J. B. Curry,

Messrs. R. G. da Costa, J. Dale, M. H. Dale, J. R. Dallmeyer, A. C. C. Damant, H. M. Dannatt, E. O. Daum, Captain Dauppe, Messrs. C. F. Davey, A. S. Davidson, H. Davies, A. L. B. Dawson, C. R. Dawson, Damer Dawson, L. Day, L. F. Day, H. E. Dean, N. C. Deb, A. W. Dench, Colonel Dennis,

Messrs. A. E. C. Dent, F. Dickson, The Hon. J. A. Dimmitt, Messrs. E. W. Ditchburn, V. F. Dittrich, R. H. Dixon, W. H. Dixon, L. Dobson, G. Dow, P. H. S. Drew, V. H. Drewry, A. R. Driver, R. J. Drury, R. G. Duncan, A. G. Dunn, F. L. Dunster, D. C. Dyball,

Messrs. H. J. Ebner, K. N. Eckhard, E. R. Edwards, H. N. Edwards, H. W. Edwards, L. J. Eggby, H. Elder, Sir John Elliot, Messrs. F. O. Ellis, G. E. Embleton, J. Esplin,

Messrs. A. J. Fabbrini, F. D. Y. Faulkner, C. Fawcett, W. Featherstone, Lt.-Col. L. F. R. Fell, Messrs. J. Ferguson, W. J. Field, A. L. Fielding, J. J. Finlayson, G. Fitch, L. N. Flatt, A. E. Fletcher, L. Ford, R. E. Fordham, I. C. Forsyth, A. Fossey, H. C. Foster, J. A. Foulds, R. W. Foxlee, R. Freeman, A. E. Frost, C. T. Fry,

Messrs. W. Galloway, C. F. Gardner, Viscount Garnock, Mr. J. Gatto, Commander H. V. Gaud, Messrs. H. F. S. Gedge, E. R. Gibson, W. J. Gibson, J. L. Gilbert, I. M. Gillett, T. Gillett, A. J. Gilliard, S. E. Gillies, L. A. Ginger, R. K. Glascodine, A. Gloster, G. Godfrey, G. C. Gold, J. Gold, R. Gosling,

Messrs. C. W. Goodman, K. W. C. Grand, J. C. Grant, A. H. Grainger, W. T. Gray, E. W. Greaves, Sir John Greaves, Messrs. H. Green, J. Greenhalgh, H. Greenham, T. Greenwood, E. H. Greet, H. Gresham, R. Gresley, J. W. Grieve, A. E. Grimsdale, J. R. Grimsdell, J. C. Groocock, D. E. Gudgin, F. W. Gutridge,

Sir John Hacking, Messrs. N. Haddon, D. W. Hadfield, J. Hadfield, A. G. Hall, T. O. M. Halliday, J. Hannah, E. W. Hanslip, A. J. Harby, F. C. Harding, F. D. M. Harding, L. W. Harding, J. F. Harrison, G. T. Hart, W. H. Hartley, Sir John Hartopp, Messrs. R. J. Harvey,

Messrs. C. A. F. Hastilow, M. S. Hatchell, R. G. Heaney, H. L. S. Heap, S. G. Hearn, Sir James Helmore, Messrs. N. B. Henderson, C. G. Henson, K. Hewison-Smith, J. L. Hewitt, F. A. Hewson, A. E. Hoare, H. M. Hoather, H. W. Hobbs, D. G. Hodges, R. G. Hodges, R. B. Hoff,

Messrs. S. Hogg, H. Holcroft, H. H. Holloway, A. Hood, A. G. Hopking, C. P. Hopkins, W. G. Hornett, J. Howard, R. Howard, A. A. Howarth, Colonel W. H. Howlett, Messrs. H. J. Hulme, H. S. Hundleby, E. S. Hunt, F. T. Hunter, E. P. Hubbard, J. O. P. Hughes, J. D. Hutchison, F. B. Hyde, W. H. Hyde,

Messrs. A. C. H. Illston, J. Ingham, C. C. Inglis, M. C. Inglis, E. Ingoldby, J. Innes, H. G. Ivatt,

Messrs. Forbes Jackson, G. C. Jackson, T. D. Jacobs, G. E. Jarman, A. E. Jefferd, A. Jenkins, F. E. Jobson, A. Johnson, J. D. Johnson, H. G. Johnson, N. Johnson, J. Johnstone, E. J. Jones, E. L. Jones, J. S. Jones, W. L. Jones, A. G. Judson,

Messrs. S. P. Kay, L. M. Keegan, J. V. Keene, W. G. Kefford, W. Kelway-Bamber, E. Kent, A. Kenyon, J. W. Kershaw, G. E. Key, A. S. King, H. T. Kingston, A. E. Kirton, C. F. Klapper, J. P. Koster,

Messrs. D. R. Lamb, T. T. Lambe, A. Lamm, C. J. Large, T. S. Lascelles, W. H. Lawrence, E. Lawton, H. Lawton, H. Ledger, Sir Frank Lee, Messrs. K. H. Leech, I. G. E. Leek, G. Le Horgne, Lt. Col. G. A. B. Leishman.

Messrs. F. D. Lester, M. H. P. Le Vie, Martin Lewis, The Hon. Sir John Lienhop, Messrs. A. B. Lloyd, E. E. Lloyd, J. H. P. Lloyd, R. E. Lloyd, E. G. Longman, F. Lord, S. Lord, W. D. Lorimer, E. D. Lottin, E. J. Lougher, M. D. Lowndes, T. S. Lyon, Colonel The Hon. R. Lyttelton,

Messrs. W. H. Maass, C. MacDonald, J. MacKenzie-Mair, C. G. Mackie, A. B. MacLeod, W. MacOwan, A. J. Maguire, J. Pelham Maitland, N. W. Manby, A. W. Manser, R. E. Marks, R. F. Marriott, G. C. Marsh, S. W. Marsh, A. N. Marshall, E. K. Marshall, J. H. Marshall, K. C. T. Marshall, V. M. Marshall, E. W. Marten, J. F. Martens, F. G. S. Martin, F. Mason, Sir Ronald Matthews, Messrs. F. G. Maxwell, P. W. May, C. R. Mayo, C. McCauley, R. A. C. McClure, Captain C. R. McCrum, Messrs. McFetridge, J. McGuigan, O. S. McInery, W. McKie,

Messrs. H. Melhuish, L. Melhuish, F. O. Mellors, T. Mensforth, C. L. Metcalfe, J. C. Metcalfe, J. P. Metcalfe, R. Metcalfe, R. D. Metcalfe, P. Middlemass, T. C. B. Miller, J. W. C. Milligan, E. I. Milne, W. H. Milne, W. J. Mitchelhill, R. W. S. Mitchell, Lord Monkswell,

Messrs W. J. Moore, E. S. Moore, E. Moreland, E. J. Morris, J. J. F. Morrison, J. C. Morton, W. H. Morton, D. J. Muir, P. Mulvaney, F. Muncey, S. Murray-White, A. N. Mustoe,

Messrs. O. Naylor, S. M. Nazir, Sir George Nelson, Messrs. R. E. Nelson, D. Newall, S. Newman, H. Newsam, N. Newsome, J. C. Nisbet, O. S. Nock, J. W. Norris, L. B. Norrish,

Captain P. M. Olver, Messrs. E. C. Ottaway, G. T. Owen, R. H. Owen, J. E. Owston, A. H. C. Page, W. F. Pailing, F. B. Palmer, P. S. Palmer, C. R. Parker, C. E. Parkes, C. R. Pasley, C. A. Pass,

Messrs. W. J. Peckett, W. H. Peters, J. Pettifer, G. Pettigrew-Smith, W. Pickett, W. V. Pilkington, C. M. Plane, F. D. Playford, D. C. Plyer, E. Pollard, S. Potter, T. Potter, R. A. Powell, F. J. Pratt, Sir R. Price, Messrs. C. Pritchard, R. H. Pritchard, E. G. Prothero, T. K. Prothero,

Messrs. H. W. Ralph, A. Rankine, K. B. Rao, J. Ratter, Captain A. H. Read, Messrs. G. Read, G. S. J. Read, W. E. A. Redfearn, L. Reeves, W. G. W. Reid, W. Rhodes, R. A. Riddles, Colonel G. Rigby, Messrs. J. W. Rimmer, J. L. Riordan, H. E. Robarts, A. E. Roberts,

Sir Brian Robertson, Messrs. E. Robertson, C. H. Robinson, D. M. Robinson, E. A. Robinson, A. E. Robson, L. G. B. Rock, A. Roebuck, A. J. Romer, F. B. Rose, J. B. Ross, W. F. Rowlinson,

Lt. Colonel H. Rudgard, Mr. R. V. Rumble, Lord Rusholme, Messrs. C. Russell, J. M. Russell, W. J. Ruston, C. F. Ryan, D. M. Ryan, J. Ryan,

Messrs. H. Sampson, A. J. Sanford, S. H. Saunders, J. S. Schofield, N. Schofield, T. Schur, J. Scott, J. I. Scott, A. N. Seale, F. Sedcole, E. W. Selby, C. Sellars, Sennett, S. G. M. Shallard, Sharples, C. A. Shepherd.

Messrs. W. P. Shepherd-Barron, F. E. Sheppard, W. Shirley, F. Shore, M. W. Shorter, L. Sibbit, C. N. Silvester, C C. J. Simmonds, G. E. Simmonds, A. W. Simmons, G. S. Simmons, R. A. Simmons, F. T. B. Simpson, F. W. Sinclair, A. D. Smalley, A. L. Smart, W. A. Smart, R. A. Smeddle,

Messrs. A. B. Smith, A. W. G. Smith, C. E. Smith, Clive Smith, C. Leslie Smith, D. Smith, F. W. J. Smith, J. A. Smith, J. W. Smith, J. W. E. Smith, R. T. Smith, S. G. Smith, W. Gilmour Smith, G. Smithyman, H. S. Smythe, A. H. Sommer, J. Southern, J. E. Spear, B. Spencer, J. C. Spencer, D. Standen, Sir W. A. Stanier,

Messrs. F. L. Stafford, J. Steele, R. R. Stephens, A. V. Stewart, W. Stewart, F. W. Still, T. Stockings, D. T. Strain, H. S. Stubbs, Captain A. Swan, Mr. H. H. Swift, Major General G. S. Szlumper,

Messrs. P. N. Tarleton, G. H. Taylor, A. K. Terris, J. W. Terry, F. Theakston, J. B. Thom, G. Thomas, W. T. Thompson, T. B. L. Thomson, N. Thorneley, L. J. Tichelly, W. G. Tilling, Major E. B. Todd, Messrs. R. C. R. Toller, W. L. Topham, J. C. L. Train, .

Messrs. C. L. Trask, E. D. Trask, W. G. Trett, B. Troughton, A. W. Trow, R. M. Tuffnell, The Hon J. M. Tully, Messrs. A. E. Turner, F. Turner, J. D. K. Turner, T. F. Turner, W. Turner, C. E. Turner-Jones, R. M. Tyrrell,

Messrs. A. B. B. Valentine, W. Vandy, Lt. Colonel C. E. Vaughan, Messrs. H. G. Vaughan, C. E. H. Verity, J. F. B. Vidal, W. T. Vizer-Harmer,

Messrs. C. C. Waddington, C. C. H. Wade, W. J. Wakley, Captain. W. P. V. Wakley, Dr. Walker, Colonel R. J. Walker, Messrs. W. Walker, H. C. Walters, J. R. Walton, J. G. Want, S. B. Warder, J. W. Watkins, N. C. Watney, W. Watson, J. C. Way, J. A. Wayte, W. H. Webb, E. D. Wells, G. M. Wells, H. Westoby, F. Seymour Whalley,

Messrs. H. A. A. While, A. J. White, H. B. White, I. White, S. White, S. I. White, W. H. White, F. Whyman, R. G. Wickham, R. S. Wild, J. A. Wilks, P. A. Willeard, A. Williams, G. Williams, N. T. Williams,

Messrs. W. Cyril Williams, H. Wilmot, A. G. Wilson, E. J. Wilson, W. H. Wilson, E. Wilson-Hague, G. Witton, J. P. Winder, G. F. Wix, E. M. Wolstenholme, J. A. Wood, Sir William V. Wood, Messrs. D. G. Woodman, F. E. Woods, W. A. Worth, L. R. Wyatt, Colonel R. E. S. Yeldham.

Improved Portsmouth-Isle of Wight Service

A considerable improvement has been made in the service between Portsmouth and stations in the interior of the Isle of Wight; this has been done by cutting the waiting time between boat arrival and train departure, and vice versa, at Ryde Pier Head. Previously, on the arrival of the boats from Portsmouth, the Ventnor trains had left Ryde Pier Head first, and had been followed by the Newport and Cowes trains, but this order of procedure has now been reversed.

For example, the 8.50 a.m. from Waterloo, reaching Portsmouth Harbour at 10.26 a.m., connects with the 10.35 a.m. boat, due Ryde Pier Head at 11.5 a.m. The Cowes train now starts at 11.18 a.m. (17 min. earlier), and reaches Newport at 11.45 a.m. (21 min. earlier) and Cowes at 11.59 a.m. (20 min. earlier). The Ventnor connection follows from Ryde Pier Head at 11.25 a.m. (3 min. earlier). This applies at hourly intervals throughout the day.

In the reverse direction, with slight changes in the times of Island trains, the ship leaves Ryde Pier Head at 30 min. past the hr. (5 min. earlier) and is due in Portsmouth Harbour at the even hour, giving 20 min. margin, instead of the previous 15 min., before departure of the London train at 20 min. past the hr. This arrangement also usefully increases the previously tight margin of 3 min. between boat arrivals and stopping trains for the Brighton line.

Royal Tour in Victoria

The Royal Train in which the Queen and the Duke of Edinburgh have toured Victoria was briefly described in our December 18 issue. State Car No. 5, used by the Queen, was built at Newport Workshops for the intended visit of the late King George VI. It is panelled with the finest Australian timbers. From it, it was possible for the Queen to speak by telephone to London and to almost any part of the British Commonwealth.

Immediately behind the locomotives were a luggage van, three sitting carriages, a special coach with sleeping accommodation and showers, a dining car, the Vice-regal Car and the State Car with a special observation platform in the rear.

The Queen and the Duke of Edinburgh joined the train at Sale, 127 miles from Melbourne on March 3. During the journey to Melbourne they visited the Gippsland towns of Traralgon, Yallourn, and Warragul. The Royal Train travelled over the main Gippsland line on which the work of doubling, regrading, and electrifying is in progress. On March 4 the train left Melbourne at 7 p.m. for Goorambat, in preparation for the progress next day through Northern and Central Victoria. The journey was over the main North-Eastern route to Sydney as far as Benalla and then along a branch for ten miles to Goorambat where the night was spent.

On March 5 the journey continued from Goorambat to Benalla. While the Royal party visited Benalla and other country towns the Royal Train went back along the main line as far as Mangalore, the junction for the Goulburn Valley line. It travelled to Tatura where the Queen rejoined it, and thence traversed a cross-country line to Echuca. From Echuca it went south to Bendigo and on to Castlemaine, and then west across to Maryborough. That night it stopped at Dowling Forrest near Ballarat.

The Royal Train continued on March 6 to Ballarat, then over the cross-country line to Geelong, one of the oldest lines in Victoria. The journey from Geelong back to Melbourne was broken by a stop at Laverton, the Royal Australian Air Force Centre. From Melbourne the Royal Train went to the Eastern country district of Warburton where the Queen and the Duke rested for a few days. The distance covered by rail in Victoria was between six and seven hundred miles.

LISTER PRODUCTS AT THE B.I.F.—In the Castle Bromwich section of this year's B.I.F., R. A. Lister & Co. Ltd. is exhibiting three models of its power loaders. The smallest, model PL6, will be seen for the first time. It is suitable for lifting cases, bales, sacks, or crated packages from ground to lorry level or for stacking such goods in warehouses or factories to a maximum height of 6 ft. The 16 ft. (PL12) and 24 ft. (PL18) models were introduced some 18 months ago, and have proved their worth to port authorities, railways, markets and to any industrial concern desiring to save manual effort and, at the same time, secure speedier handling of goods. A special feature of the two larger types is the patented device for raising and lowering the platform.

Staff & Labour Matters

Minister of Labour and Pay Talks

After the recommendations of the courts of inquiry on the wages dispute in the engineering and shipbuilding industries, Sir Walter Monckton, Minister of Labour, has invited the T.U.C., the British Employers' Confederation and the nationalised industries to informal talks on general questions affecting wages. In the House of Commons on March 3 the Minister said that the Courts of Inquiry had made suggestions about the wider problems involved in wage disputes which would require mature consideration after consultation with the interests mainly concerned. The Ministry did not seek to impose a decision but tried to narrow down the area of a dispute and suggest a place where agreement could be reached.

In a recent statement the general council of the T.G.W. Union suggests that the union will support the Ministry's case for the settlement of disputes by arbitration.

Provincial Busmen's Wages

The Court of Inquiry set up to consider the provincial bus dispute published its findings on March 5. It recommends a further wage increase of 3s. a week, in addition to the 4s. a week granted from December 7, so as to make the total increase comparable with that given in other sections of the transport industry. The new weekly rate for drivers after twelve months' service will be 137s., and 133s. for conductors in most companies. The court's findings are not binding, but the National Council of the Omnibus Industry is expected to meet shortly to consider them.

Parliamentary Notes

British Transport Commission Bill

When the British Transport Commission Bill came before the House of Commons on February 23 for the Second Reading, Mr. Ernest Davies (Enfield E.—Lab.) said the mere fact that the Bill was so limited gave them cause for concern. They felt that it was indicative of the restriction which still prevailed on modernisation and development. British Railways in particular had been starved of capital investment for a long period. The fact that at this stage, when a Private Bill was brought to the House, there were only a large number of minor matters in it indicated that the Commission was not in a position, or had not been encouraged by the Government, to embark upon considerable schemes of extension and development.

Clause 28 of the Bill, he said, gave the B.T.C. power to substitute lifting barriers for gates at public road crossings. An experiment had been conducted in Yorkshire with a type of Continental barrier, and he understood it had proved satisfactory. He thought that the local authorities, who were responsible for road safety, should be consulted first.

London Suburban Railways

Mr. Davies regretted there was no indication in the Bill of any further measures for the electrification of North London suburban lines. He was glad that at last plans were being drawn up for the building of the new tube from Victoria to Walthamstow and that there was to be a connection with the North London line at Seven Sisters, which would bring about the electrification of those lines.

It was a tremendous task, he added, for the nationalised concern to catch up with the work which should have been carried out in the past by private enterprise. During recent years, there had been considerable mechanisation of goods depots and other components of the railway system. He expressed great satisfaction at progress made with dieselisation.

Railway Reorganisation

He asked what the position was with railway reorganisation under the 1953 Act. The period of one year expired next May, and he wondered when they could expect the White Paper.

To attract holiday traffic, Mr. Davies continued, the railways should extend the system of cheap tickets for the holiday period, provided that bookings were made in advance so that the trains could be assured of full loading capacity. By some form of family tickets on holiday specials, and so on, some of the traffic which went to the roads today could be attracted to the railways.

B.T.C. Police Powers

Mr. David Jones (The Hartlepools—Lab.) complained that Clause 27 of the Bill under discussion gave the B.T.C. Police power to arrest on suspicion any person on railway premises, when it was the responsibility of the arrested person to prove his innocence.

Mr. Geoffrey Wilson (Truro—C.) urged extension of the "Starlight Special" services.

Reply for the Government

Mr. Hugh Molson (Parliamentary Secretary to the Ministry of Transport & Civil Engineering) replying, assured the House that before the Minister agreed to the introduction of lifting barriers there would be the fullest consultation with the highway and/or local authority.

As to railway reorganisation, it was only recently that the present Chairman of the B.T.C. took office. The Commission was required to produce a reorganisation scheme by May 6 of this year. They knew that it had long been studying the matter, and that since Sir Brian Robertson took over he had been pressing on with it, in a keen desire to make certain that the scheme could be prepared by the date provided for in the Act. At present, they had no detailed information on the subject, and it was only constitutionally right that both the Department and Parliament should await the production of the scheme.

On diesel railcars Mr. Molson said the Commission was exploring the increased use of diesel engines for many purposes, especially for shunting, and in the case of reasonably busy lines, where it was possible to keep the engine running for a great many hours of the day, there was no doubt that the diesel had very considerable advantages over the steam engine.

After referring to the plans for diesel trains in the West Riding and elsewhere, he said the special advantages of the diesel —quick acceleration, greater cleanliness, and lower cost per unit-mile—did not show themselves to the greatest extent in the case of branch lines in rural districts. The competition there was between the diesel engine on the railway and the local motor buses, and an increasing proportion of the omnibuses were now propelled by diesel engines. The costs of maintaining stations, signalling, and track tended in nearly all cases to make it more costly to keep the branch lines open and to run diesels upon them than to use road transport.

The Bill was then given a Second Reading, and committed to a Committee.

Questions in Parliament

Exports of Locomotives to Russia

The President of the Board of Trade was asked by Mr. J. C. Forman (Glasgow Springburn—Lab.) whether he would define the type of controls exercised by his Department in the matter of exports of locomotives to the U.S.S.R.; what action had been concerted with other nations to impose similar controls on locomotives for Russia; and with what nations.

In a written reply Mr. Peter Thorneycroft stated: Exports to the U.S.S.R. of all locomotives are subject to licensing control. Applications for export licences will be considered on their merits. Orders are notified to the Consultative Group on East-West trade. This is in accordance with the policy agreed by all members of the Group.

African Communications Conference

The Secretary of State for Foreign Affairs was asked in the House of Commons on March 1 by Mr. Arthur Henderson (Rowley Regis & Tipton—Lab.) to make a statement on the Seven-Power Conference to co-ordinate defence arrangements in Africa, due to begin at Dakar on March 11.

Mr. Anthony Eden replied that a conference held at Nairobi in August, 1951, undertook a study of communications between Southern Africa and the Middle East in war. The French and United Kingdom Governments had now convened a second conference to undertake a study covering the Western Territories of Africa south of the Sahara. There would be representatives of the inviting powers, Belgium, Liberia, Portugal, and South Africa, and a delegation representing British West African Territories. The Central African Federation and the U.S.A. were sending observers.

Asked by Mr. Henderson if the ambit of the conference was restricted to questions of communications, Mr. Eden replied in the affirmative.

Contracts & Tenders

British Railways, North Eastern Region, have placed orders as follows:—

Charles Churchill & Co. Ltd., Newcastle-on-Tyne: provision of two No. 2 Cincinnati tool and cutter grinders, Shildon Wagon Works

The Butterley Co. Ltd., Butterley: repairs to Bridge No. 13 over Farnham Road, Horton Park, St. Dunstans North and East to Keighley Branch

L. C. Abdale & Son, Darlington: construction of foundations for 40-ton and 60-ton weighbridges, Darlington

Leonard Fairclough Limited, Adlington, Lancs.: provision of reinforced-concrete foundations at Fencehouses and Stocksfield

E. H. Jones (Machine Tools) Limited, Manchester, 2: provision of four milling machines, York Carriage Shops

An order for a 22,500-ton passenger and cargo liner of 21 knots service speed has been placed with Vickers-Armstrongs Limited by Canadian Pacific Steamships Limited. This is the second of two sister ships to be ordered; one is already under construction on the Clyde. The two together will cost over $30,000,000. The first will be ready for the Britain-Canada service in early Spring 1956 and will be

named *Empress of Britain*. The second vessel will go into service early in 1957.

The High Commissioner for India is inviting tenders for locomotive crank axles. See Official Notices on page 311.

The Luxembourg Ministry of Public Works has opened an international competition in which architects and engineers are invited to submit proposals for the construction of an administrative building for the Luxembourg National Railways. The closing date is July 1.

A copy of the original specifications and plans (in French) may be obtained on loan from the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.2.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Johannesburg reports that he has been approached by the firm of A. Gray & Son (Pty.) Ltd., of 10-11, Equity Buildings, Johannesburg, of which the principal is Mr. A. Gray.

This firm has been established for some six years and specialises in the supply of permanent way materials to the South African Railways. Its principal business lies in the supply of teak railway sleepers and, on an average, business with this particular article amounts to £250,000 per annum. Mr. Gray feels that in view of his close connections with the railways, some United Kingdom manufacturer might be willing to consider appointing him as tender agent for steel sleepers. There may be United Kingdom firms manufacturing this type of equipment who have no resident tender agent (without which it is not possible to do business with the South African Railways) in the Union. Mr. Gray is considered a suitable connection for United Kingdom manufacturers for this type of business.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Johannesburg reports that the Stores Department, South African Railways, is calling for tenders for:—

10,000 pins, coupling, bell buffer
10,000 pins, coupling, automatic coupler

The closing date for receipt of tenders is March 18. The drawings may be inspected at the office of the High Commissioner for the Union of South Africa, Trafalgar Square, London, W.C.2. A copy of the tender documents, including conditions of contract but not including drawings or specifications, is available on loan to United Kingdom firms in order of application to the Branch.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the India Stores Department, London, has reported that the Director-General of Supplies & Disposals, New Delhi, is calling for tenders for :—

925 guards, axle only, for 7 in. by 3½ in. journal for wagons (m.g.)
850 guards, axle only, for 7 in. by 4 in. journal for wagons

The closing date for receipt of tenders is 10 a.m. on March 19. Tenders should be submitted to the Director-General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi.

Forms of tender are only available for purchase in India from the Deputy Director-General (Supplies), Directorate-General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras.

If there is insufficient time in which to obtain the documents from India, tenderers are advised to submit quotations by letter and, at the same time, ask for a set of the tender documents to be sent to them, which documents they should undertake to complete and return as soon as possible on the basis of the quotations made by letter.

A copy of the tender form can be examined at the India Store Department, 32-44, Edgware Road, London, W.C.2, on application to the "CDN" Branch. The drawings can be seen at the offices of Hodges, Bennett & Co. Ltd., 59-60, Petty France, London, S.W.1, from whom copies may be obtained if required at a fixed price per sheet.

The Director-General of Supplies & Disposals, New Delhi, is inviting tenders for :

880 axleboxes, 10 in. by 5 in. (b.g.), for b.g. underframes and 16-ton axle four-wheel wagon
1,450 plate axlebox faces for axlebox No. 14 by 16
800 plate faces for axlebox, 7 in. by 3½ in. and 7 in. by 4 in. (material steel class II)
2,100 tie axle guards, 11¼ in. C by 1 ft. 2¼ in. jaw (material steel class II)

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/16890-D/I, and will be received up to 10 a.m. on March 20.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Delhi has reported that the Directorate-General of Supplies & Disposals, Government of India, is calling for tenders for :—

451 ref. No. D.737-rods, connecting point with lug, for 41¼ lb. and 50 lb. NS. rails
178 ref. No. D-739-rods, connecting points with lug, for 69 lb. with lug, for 69 lb. and 82 lb. rails
101 ref. No. D.740-rods, connecting points with lug, for 87 lb. and 90 lb. rails
317 ref. No. D.742-rods, safety, for 50 lb. RBS rails

The closing date for the receipt of tenders is 10 a.m. on March 22. Tenders should be addressed to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi. A set of the tender documents, including conditions of contract and drawings, is available for loan to United Kingdom firms in order of application to the Branch, Lacon House, Theobalds Road, London, W.C.1.

The Director-General of Supplies & Disposals, New Delhi, is inviting tenders for the following :—

Class E (b) 2.—Carriage and wagon underframe components, 5 ft. 6 in. gauge.
1,450 buffer outer casings
720 buffer outer cases for short buffer (cast steel)
685 buffer inside cases, 13 in. dia. face, complete with spindle fixed in position with plugs (welded on)
3,000 buffer plungers, 13 in. dia. face, complete with floating spindle fixed in position with plugs (welded on)

Tenders are to be submitted to the Director-General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/17287-D/III and will be received up to 10 a.m. on March 24.

The Director General of Supplies & Disposals, New Delhi, is inviting tenders for :

21,460 bearings, axlebox, 7 in. by 3½ in. Jn. (for C & W)
24,750 bearings, axlebox, 7 in. by 4 in. Jn. (for C & W)
3,630 bearings, axlebox, 8 in. by 4¼ in., for WD wagons
1,880 bearings, axlebox, 9 in. by 4½ in. (m.g.)
4,660 bearings, axlebox, 7 in. by 4 in. (m.g.)
All items should conform to IRSS. R-7/49.

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/18915-D/I, and will be received up to 10 a.m. on March 26.

The Director-General of Supplies & Disposals, New Delhi, is inviting tenders for :

380 shell axleboxes (cast steel), coupled wheels (rough), "GS," "GCS," "H," "HS," "MSM," "HSG," "HX," "L" and "LT" classes

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/16828-D/I and will be received up to 10 a.m. on March 27.

Forms of tender for the foregoing three tenders are only available for purchase in India from the Deputy Director-General (Supplies), Directorate-General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras. If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for tender forms and return them duly completed as quickly as possible on the basis of advance quotations already submitted. A copy of the tender form can be examined at the India Store Department, 32-44, Edgware Road, London, W.2, on application to the "CDN" Branch, and the drawing can be seen at the offices of Hodges, Bennett & Co. Ltd., 59-60, Petty France, London, S.W.1, from whom copies may be obtained if required at a fixed price per sheet.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Karachi has reported that the Director-General (Railways), Ministry of Communications (Railway Division), Government of Pakistan, is calling for tenders for the supply of 61 broad gauge bogie wagons "BR" type, complete, in knockdown condition for the North Western Railway.

The closing date for receipt of tenders is noon on April 20. Tenders will be accepted only on the specified tender form and schedule. Tender documents may be obtained from the office of the Director-General (Railways), Railway Division, Ministry of Communications, Room No. 342, 2nd Floor, Multi-Storeyed Building, Adj. Assembly Building, Kings Way, Karachi, on payment of Rs. 100 per set (not refundable).

A set of tender documents, without drawings, is available for loan to United Kingdom firms in order of application to the Branch, Lacon House, Theobalds Road, London, W.C.1.

XUM

Notes and News

Salesman Wanted.—A salesman is required with sales knowledge of main line and industrial siding and track lay-out work. See Official Notices on page 311.

Vacancies for Designers and Draughtsmen.—A.E.C. Limited require designers and draughtsmen for development of diesel trains. See Official Notices on page 311.

Assistant Traffic Superintendent Required.—Applications are invited for the post of assistant traffic superintendent required by the Nigerian Railway for tour of 12 to 24 months. See Official Notices on page 311.

Traction Engineer Required.—The General Electric Co. Ltd. require an experienced traction engineer for tender and project work in connection with electric and diesel-electric projects. See Official Notices on page 311.

New Terminus at Lagos.—On page 148 of our February 5 issue it was stated that the new terminus at Lagos, Nigerian Railway, replaced a building erected in 1910 at a cost of under £400. This figure should have been £4,000.

Road Haulage Association: Annual Luncheon.—At the annual luncheon of the Road Haulage Association to be held at Grosvenor House, Park Lane, London, W.1, on Tuesday, May 11, at 12.30 for 1 p.m., Mr. Alan Lennox-Boyd, Minister of Transport, will propose the toast of the Association, to which the National chairman, Mr. Bernard Winterbottom, will respond. Lord Brabazon, a former Minister of Transport, will reply to the toast of the Guests. The luncheon will be followed by a R.H.A. National Council meeting at 3 p.m., and the Annual General Meeting at 3.30 p.m., both to be held at Grosvenor House.

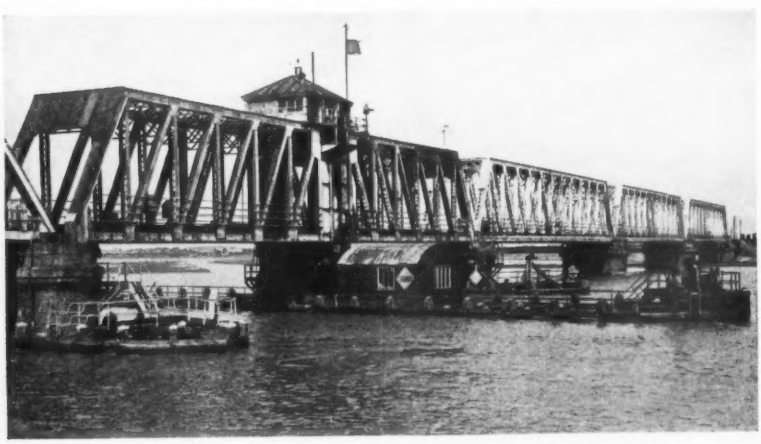
Breydon Bridge, Eastern Region.—The Eastern Region has deferred for the time being any decision as to demolition of the railway bridge across Breydon Water at Yarmouth. This bridge has previously provided a link for passengers travelling via Yarmouth or Lowestoft and other stations on the Norfolk & Suffolk Joint Line. Breydon Bridge was closed last September on the introduction of the Eastern Region winter service and will remain closed this summer. An experimental and improved train service is to be run during the summer by alternative routes to stations affected by the bridge closure. Should this prove successful, demolition will be reconsidered at the end of the year as an economy measure.

Western Region Signalling Developments.—It is regretted that a mis-statement occurred in the editorial article on this subject in our issue of March 5. In the modern intermediate block signalling installation on the Western Region track circuiting is not carried through to the signalbox in advance but only to the overlap point beyond the intermediate signal, block telegraph working being fully maintained.

Royal Society of Arts: Cantor Lecture on Railway Safety.—The Cantor lecture "Safety on the Railways" was given by Lt.-Colonel G. R. S. Wilson, Chief Inspector of Railways, Ministry of Transport & Civil Aviation, before the Royal Society of Arts on March 8; it is the subject of an editorial article on page 289. Mr. A. C. Hartley, Member of Council of the Society, proposed a vote of thanks to the speaker. Those present included:—

British Transport Commission: Messrs. F. A. Pope and J. C. L. Train, Members; J. Ratter, Chief Officer (Civil Engineering); S. E. Parkhouse, Chief of Operating Services; R. C. Bond, Chief Officer (Mechanical Engineering); J. H. Fraser, Chief Officer (Signal & Telecommunications); *North Eastern Region:* Mr. A. P. Hunter, Divisional Operating Superintendent; *Eastern Region:* Mr. E. W. Rostern, Operating Superintendent; *London Midland Region:* Messrs. E. S. Hunt, Assistant Chief Regional Manager, and S. A. Fitch, Assistant Operating Superintendent; *Scottish Region:* Messrs. T. F. Cameron, Chief Regional Manager, and J. McCreadie, Operating Superintendent; *Southern Region:* Mr. S. W. Smart, Superintendent of Operation; and *Western Region:* Mr. S. Gray, Assistant to the Chief Regional Manager.

Electrical Aids to Higher Production.—The Industrial Division of Philips Electrical Limited showed a new industrial film "A New Approach to Production Improvement," at the British Council Theatre, Hanover Street, London, W.1, on March 4. The film is of interest to both technical and non-technical audiences and deals with various methods of joining and heating metals, including such recent developments as automatic projection welding equipment, electronic control panels for standard machines and a multi-point welding machine producing within 40 sec. a bucket seat requiring 110 spots. Electronic measuring instruments and applications of high frequency and dielectric loss heating are also shown and a survey of arc welding leads up to the use of contact electrodes in the construction of railway wagons and coaches. The film, in both 16 mm. and 35 mm., runs for 50 min. and will be loaned free of charge to interested bodies on application to the Industrial Application Centre, Philips Electrical Limited, 122, Brixton Hill, London, S.W.



The swing bridge over Breydon Water, Yarmouth, Eastern Region

British Railways Heavy Iron and Steel Traffic.—British Railways carried 235,609 tons of iron and steel from the principal steel works during the week ended February 27, the highest figure for five months. In the same period 312,900 tons of iron ore were conveyed. During the week ended 6 a.m. on March 8, 3,231,190 tons of coal were cleared from deep-mine pits and opencast sites. The weekend figure was 414,530 tons.

British Railways, Southern Region, Lecture & Debating Society: Prize Essays.—The results of the Prize Essay Competition will be announced at the meeting of the British Railways, Southern Region, Lecture & Debating Society to be held in the Chapter House, St. Thomas' Street, London, S.E.1, on Wednesday, March 31, at 5.45 for 6 p.m. Mr. C. P. Hopkins, Chief Regional Manager, and President of the Society, will present the prizes. The annual general meeting of the Society will also be held on this evening.

The Institution of Locomotive Engineers.—The report of the Council of the Institution of Locomotive Engineers for 1953 shows a net increase in membership of six, making the total 1,897 at the end of the year. There was a marked increase in the number who transferred from Associate Member to Member and Graduate to Associate Member. Nine general meetings and one informal meeting were held in London at which papers or addresses were presented. A number of awards was made. The accounts show a favourable balance of £585 11s. 11d.

Conveyancer Fork Trucks at the B.I.F.—Conveyancer Fork Trucks Limited will be exhibiting at the British Industries Fair on the stand of the Owen organisation, of which it is a member. The principal exhibit will be a Conveyancer fork lift truck, model E2-20/3W. This 2,000-lb. electric three-wheel fork truck is a re-styled development of earlier models. It is fitted with a 9 ft. lift mast, and incorporates full free lift, which permits elevation of the load without extension of the mast. Large-capacity batteries enable long shifts to be worked without re-charge, and the truck particularly accessible for routine servicing.

San Paulo Railway.—An extraordinary meeting of shareholders of the San Paulo (Brazilian) Railway Co. Ltd. has been called for March 16 to consider a further reduction of the company's capital. The proposal is for a repayment of 2s. 8d. per 6s. 8d. share, involving a sum of £400,000. The subsidiary land company, Companhia Fazenda Belem, has begun to repay to the company some of its debt which, at December 31, 1952, amounted to Cr.$24,023,099·70. During the year ended December 31, 1953, these repayments amounted to Cr.$4,000,000. It is anticipated that repayments in 1954 should be on a similar or somewhat larger scale. In September and October last, fearing a de-

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

YOUNG SALESMAN wanted with sales knowledge of main line and industrial Siding and Track lay-out work. Good prospects for live man. Write to Box 5919, Frost-Smith Advg., 64 Finsbury Pavement, London, E.C.2.

A.E.C. LIMITED require Designers and Draughtsmen for development of Diesel Trains. Premises at Borehamwood, Herts. Work is in connection with a new project on behalf of British United Traction Co., Ltd., and automobile and railway experience would be an advantage. Permanent employment and pension scheme. Applications in writing stating age, experience, and salary required to Staff Records Office, Windmill Lane, Southall, Middlesex.

DUE to plant expansion important wagon builder desires Sales Engineer for Belgian Plant. Work to consist of estimating costs both material and labour, preparing detailed technical specifications, writing quotations, and general sales work both written and by personal contact. Spanish and French languages desirable. Technical training essential. Preference given to man willing to travel. Excellent future for man with right combinations of sales and technical abilities. Minimum age 25, maximum depending on experience but preferably not over 45. Excellent salary depending on qualifications. Reply Box 89, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

ASSISTANT TRAFFIC SUPERINTENDENT required by NIGERIAN GOVERNMENT RAILWAY for tour of 12/24 months either (*a*) with prospect of pensionable employment at salary, etc., in scale £750 rising to £1,480 a year or (*b*) on temporary terms at salary, etc., in scale £807 rising to £1,631 a year plus gratuity at rate of £100/£150 a year. Commencing salary according to experience. Outfit allowance up to £60. Free passages for Officer and wife. Assistance towards cost of children's passages or grant up to £150 annually for maintenance in U.K. Liberal leave on full salary. Candidates must have thorough training in all branches of railway operating and commercial work, railway law and economics, a good knowledge of accounts and ability to handle extensive correspondence and control staff. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/33566/RA.

THE GENERAL ELECTRIC CO. LTD. require an experienced Traction Engineer for tender and project work in connection with electric and diesel electric projects. Applications giving full details of age, experience and qualifications should be sent to the Staff Manager, G.E.C., Magnet House, Kingsway, London, W.C.2.

WANTED: 300 ton good relayable 95 lb. F.B. Rail with Fishplates. Apply Box 141, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s*. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

MILD Steel Plates, below works price. Large tonnage available. 5/16 in. thick. Immediate delivery.—PIKE BROS. (IRON & STEEL) LTD., Colnbrook, Bucks. Phone 175.

THE HIGH COMMISSIONER FOR INDIA invites tenders for the supply of:—20 Crank Axles, forged steel for A, CA, CH, CT, GT and CBT classes, machined and finished. 24 Crank Axles, forged steel, hooped, for BT/C, SG/C2, O3 and S Classes, machined and finished. 17 Crank Axles, forged steel, suitable for WA—144 and 156. Machined and finished. Forms of tender may be obtained from the Director General, India Store Department, 32/44, Edgware Road, London, W.2, on or after March 12, 1954, at a fee of 10*s*. which is not returnable. Cheques to be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Friday, April 9, 1954. Please quote reference No. 351/53.

GUAQUI LA PAZ RAILWAY.—Assistant accountant. Qualifications: Man who has passed intermediate examination of recognised accountancy body preferred. Knowledge of railway accounts an advantage. Preferably single between 28/35 years of age. SOUTHERN RAILWAY OF PERU. Locomotive, Carriage and Wagon Senior Draughtsman required, 30/35 years of age. Qualifications: Must have served a full general apprenticeship in an engineering workshop (preferably railway) and have at least five years drawing office experience with some time in an executive capacity. A knowledge of Spanish an advantage. Future prospects. Apply to The Secretary, Peruvian Corporation Limited, 144, Leadenhall Street, London, E.C.3.

terioration of the exchange position, the company transferred from Sao Paulo to London the net sum of £261,763 at an average rate of Cr.$57·906 to the £. By the end of October of last year the official rate of exchange of the cruzeiro, Cr.$52·6960 to the £, ceased to have any practical significance for ordinary remittances from Brazil to London. The Board therefore considers that, in these circumstances, it should take the open market rate of exchange for the purpose of converting assets and liabilities in Brazil into sterling. At December 31, 1953, this open market rate was Cr.$150-155 to the £.

Introduction to the Ballet.—In conjunction with Middlesbrough Education Authority, British Railways, North Eastern Region, ran two special trains on February 19, taking 1,750 Middlesbrough schoolchildren with attendant teachers, to a matinee performance of the Sadlers Wells Company at Stockton-on-Tees.

Western Region First Aid Competition.—A first aid competition for women was held recently at Old Oak Common Hostel, London. The advanced section, Class 1, was won by the Newton Abbot team who now qualify to compete in the British Railways & London Transport (Railways) Competition for Women, arranged by the St. John Ambulance Association at the Central Hall, Westminster, S.W.1, on May 21. The beginners' section, Class 2, was won by Swansea. Dr. C. T. Newnham, Regional Medical Officer, adjudicated in the team events and Dr. F. H. Taylor in the individual tests. A vote of thanks for their services was proposed by Mr. H. R. Webb, Stores Superintendent. Mr. K. W. C. Grand, Chief Regional Manager, presided and the presentations were made by Mrs. Grand.

U.T.A. Comber Line to Remain Closed.—The Northern Ireland Minister of Commerce, Lord Glentoran, in replying to an appeal that consideration should be given to the re-opening of the Belfast-Comber section of the U.T.A., said that the abandonment order for this section had been made in July last after a full examination of the facts, and the matter could not now be re-opened. Lord Glentoran said that the U.T.A. had advised him that it would not be an economic proposition either to re-open the Comber line or to develop the Belfast Central Railway, as tentatively mentioned by the Transport Tribunal, Northern Ireland, in its report of November, 1952.

Partridge, Wilson & Co. Ltd.: Authorised Capital Increased.—The authorised capital of Partridge, Wilson & Co. Ltd. has been increased from £25,000 to £150,000. The new capital consists of 329,000 5*s*. ordinary and 67,750 6 per cent £1 cumulative preference shares.

Londonderry & Lough Swilly Railway Company.—The report of the Londonderry & Lough Swilly Railway Company for the year ended December 31 last shows that total net income was £8,023 compared with £6,541 in 1952. There was a loss on railway working of £5,721 but a gain of £12,634 on road services. All railway services were discontinued on August 8, 1953, and the rails are being lifted.

British Trade Fair in Baghdad.—A British trade fair is to be held in Baghdad from October 25 to November 8, 1954. The Federation of British Industries has accepted the invitation of H.M. Government to organise a British trade fair in Iraq, and to handle this and other trade fairs abroad a separate company has been incorporated as British Overseas Fairs Limited, with Mr. Leslie Gamage as Chairman. The fair will occupy the "embassy site" of some 1,000,000 sq. ft., near the centre of the city. A number of British firms will either be sharing their own products or be represented.

Electrical Engineers' Exhibition.—Switchgear, motors and generators will be shown by the Brush Electrical Engineering Co. Ltd., at the Electrical Engineers' Exhibition at Earls Court on March 16-20. Indoor and outdoor circuit breakers for 33 kV. and 11 kV. are included, the former equipped with the Brush patent pneumohydraulic system for closing operations without recourse to external electrical supplies. Rotating machines on the stand include squirrel cage and slip ring motors (totally enclosed, screen-protected, and flameproof), and a self-regulating 58 kW. alternator with the patented Brush Amplidex form of control. In Switchgear Avenue at the exhibition, the company is showing ranges of industrial switchgear and circuit-breakers for 440-V. distribution systems.

Park Royal Vehicles.—The group trading profit of Park Royal Vehicles (controlled by A.C.V. Limited) for the year to September 30, 1953, was £360,488. The balance after taxation was £161,435 (£58,128). Group current assets total £1,336,446 and liabilities £212,890. The directors state that a strike at the Park Royal works caused some dislocations, but much of the delay has been made up.

LeTourneau-Westinghouse New Plant in Brazil.—LeTourneau-Westinghouse Company, a wholly-owned subsidiary of the Westinghouse Air Brake Company, is establishing a plant in Brazil to produce LeTourneau-Westinghouse parts and earth-moving machine. The operating company, a subsidiary of LeTourneau-Westinghouse Company, is named Tratores do Brazil S. A. (Tractors of Brazil), and will be situated near Campinas, about 60 miles from Sao Paulo. Senhor Afranio A. Ferreira, the LeTourneau-Westinghouse representative in Brazil, will be President.

Television Interference from the Lancaster-Morecambe - Heysham Electric Traction System.—During the past few months reference has been made to television interference from the Lancaster-Morecambe-Heysham line on which 50-cycle traction is now used. The London Midland Region states that the erroneous impression may have been gained that the trouble can be attributed to the particular system of electrification. Tests have revealed that the continuous interference which has led to the complaints is due to discharges across small voids existing between conductor and insulator surfaces on the catenary supporting insulators. This type of interference is not peculiar to railway traction but can occur with any extra-high voltage transmis-

sion line using pin-type insulators. On a 600-yd. section the insulators have been treated with conducting grease, apparently with considerable success, and this remedial measure is being applied to the remaining affected sections. Consideration is being given to the use a special type of insulator as a more permanent cure. The slight interference caused by the passing of trains is not thought to be serious.

Forthcoming Meetings

March 13 (*Sat.*).—Permanent Way Institution, East Anglia Section, at Cambridge at 2.15 p.m. Paper on "Fastenings," by Mr. G. W. Baker.

March 13 (*Sat.*).—Railway Students' Association. Visit to British Railways, Southern Region, Three Bridges Control Room in the morning, followed by an inspection of the Redhill-Earlswood junctions in the afternoon.

March 15 (*Mon.*).—Institute of Transport, Metropolitan Section, at the Institute of Transport, 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Paper on "Catering in relation to transport—Refreshment rooms and restaurant cars," by Mr. E. K. Portman-Dixon, British Transport Commission.

March 16 (*Tue.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "Woodhead New Tunnel: construction of a three-mile main double-line railway tunnel," by Messrs. P. A. Scott and J. I. Campbell.

March 16 (*Tue.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London, S.E.1, at 5.45 for 6 p.m. Paper on "Central Africa —the transport aspect," illustrated by lantern slides, by Mr. N. E. Norman, Nyasaland Railways.

March 16 (*Tue.*).—Railway Students' Association. Visit to Somers Town Goods Depot, late afternoon and early evening.

March 17 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1, at 5.30 p.m. Annual General Meeting, followed by a paper entitled "Experiences with British Railways standard locomotives," by Mr. E. S. Cox, Vice-President.

March 17 (*Wed.*).—Institution of Signal Engineers, at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, at 6 p.m. Paper on "Route indicators," by Mr. E. A. Webster, British Railways, Eastern Region.

March 17 (*Wed.*).—Permanent Way Institution, at the headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper on "Our legal rule-book—The Railway Clauses Consolidation Act, 1845," by Mr. F. B. Belton, London Midland Region.

March 18 (*Thu.*).—Institute of Transport, Bristol Graduate & Student Society, at the Docks Office, Bristol, at 6 p.m. Paper on "Some aspects of transport finance," by Mr. J. H. Hodge.

March 18 (*Thu.*).—Institute of Transport, East Midland Section, at The Plough Hotel, Northampton, at 1 p.m. Paper on "Some legal aspects of passenger transport," by Mr. G. S. M. Birch, Senior Solicitor Assistant, British Transport Commission.

March 18 (*Thu.*).—Institute of Transport, Northern Ireland Section, at Belfast Castle, Belfast, at 7 p.m. Annual dinner.

March 20 (*Sat.*).—Permanent Way Institution, Leeds & Bradford Section. Visit to Doncaster, Eastern Region, Locomotive Works, at 10 a.m.

March 23 (*Tue.*).—Institute of Transport, visual aids meeting, at 80, Portland Place, London, W.1, at 6 p.m. Discussion of three films: "Materials handling," "More power to your elbow," and "Palletisation in Holland."

March 23 (*Tue.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "Design and construction of Rama VI, Surat and Bandara Bridges in Thailand," by Messrs. O. A. Karensky and K. E. Hyatt.

March 24 (*Wed.*).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "Some changes in railway charging law," by Mr. H. A. Chapman, Assistant Chief Solicitor, British Transport Commission.

March 25 (*Thu.*).—British Railways, Western Region London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Talk on "Impressions of a visit to Tasmania," illustrated by lantern slides, by Mr. H. H. Phillips, Assistant Chief Regional Manager, Western Region, preceded by the annual general meeting of the Society at 5.15 p.m.

March 26 (*Fri.*).—Mansion House Association on Transport, at the Trocadero Restaurant, Piccadilly Circus, London, W.1, at 12.15 for 12.45 p.m. Annual luncheon.

March 27 (*Sat.*).—Railway Students' Association. Visits to Southern Region Freight Depot at Fratton, and the British Road Service depots at Cowes and Newport, Isle of Wight. Train leaves Waterloo at 8.50 a.m.

Railway Stock Market

Business in stock markets increased at the beginning of the week, but demand was selective. British Funds were inclined to strengthen, and in industrial shares numerous good features developed on higher dividend hopes. The general trend of markets was better than had been generally expected, bearing in mind the waiting attitude which usually prevails in the weeks in front of the Budget. Moreover the pending £30,000,000 Imperial Chemical issue will absorb a large volume of investment money which would otherwise go into existing securities. Sentiment in the City has been helped by continued hopes that the Chancellor of the Exchequer may make a small reduction in the standard rate of income tax. With higher dividends drawing attention to industrial and other shares, it is perhaps hardly surprising that foreign rails have again attracted only a very moderate amount of business.

Among foreign railway stocks those which have attractions on the prospect of a big rise in market price if takeover proposals come along in due course were favoured.

Dorada ordinary stock, for instance has rallied to 66 at the time of going to press; the 6 per cent first mortgage debentures were again quoted at 90.

Manila Railway issues again showed a fair amount of activity, though there have been no fresh developments warranting hopes of any early settlement in respect of the company's big holding of Manila Railroad bonds. Manila Railway "A" and "B" debentures strengthened to 82½ and 72 respectively, while the preference shares were 8s. 6d. and the 1s. ordinary 4s.

Antofagasta ordinary and preference were 8¼ and 40½ respectively; the 4 per cent perpetual debentures have changed hands at 46. Mexican Central "A" debentures were 82½, while in other directions, United of Havana second income stock transferred around 43 and the consolidated stock around 6¾.

There has been a fair amount of business around £34½ in White Pass new 5½ per cent loan stock. The no par value shares eased to $26½ and the 5 per cent convertible debentures were £95½. Canadian Pacifics were fairly steady at $43¼ with the 4 per cent preference stock £66¾ and the 4 per cent debentures £89.

Guayaquil & Quito 5 per cent first bonds have changed hands at 46¼. Chilian Northern first mortgage debentures around 27. In other directions some attention was again given to United of Yucatan first bonds, dealings in which took place up to 13¼. Brazil Railway bonds were 7. Costa Rica ordinary stock 9 and dealings down to 43½ were recorded in the 6½ per cent second debentures.

International of Central America gold bonds were quoted at 125 middle, but this has not been tested by recorded dealings for some months. San Paulo 6s. 8d. units have changed hands at 5s. 7½d.

There was again a little speculative interest in old Russian railway bonds, Black Sea-Kuban changing hands up to 20s. and Armavir-Touapse up to 25s.

Barsi Light were 124½ in Indian stocks, and West of India Portuguese 5 per cent debentures marked 87½.

Midland of Western Australia stock was less active and quoted at 21. Business at 79¼ was recorded in Nyasaland Railways 3½ per cent debentures.

Road Transport shares were again firm with Southdown at 29s., Lancashire Transport 48s. 6d. and West Riding 27s., Devon General 27s. 6d. and Maidstone & District 21s. 6d. B.E.T. 5s. "A" deferred stock at 42s. 3d. regained part of an earlier decline.

Small mixed movements prevailed in engineering shares. Babcock & Wilcox strengthened at 48s. 6d., but Guest Keen at 53s. 6d. lost part of their earlier rise, and Tube Investments at 61s. 9d. moved back, though T. W. Ward turned firmer at 90s. xd. Clarke Chapman at 76s. 6d. remained under the influence of the higher dividend, but Vickers at 52s. came in for some profit-taking. Ruston & Hornsby have been steady at 44s. 6d. at the time of going to press.

Among shares of locomotive builders and engineers, Beyer Peacock were 34s. 9d., Charles Roberts 5s. shares 19s. 7½d. Birmingham Carriage 30s. 10½d. and Hurst Nelson 42s. North British Locomotive eased to 13s. 10½d. Elsewhere, Vulcan Foundry have strengthened to 22s. 6d., Gloucester Wagon were 17s. xd. and Wagon Repairs 5s. shares 12s. 3d. G. D. Peters 5s. shares have remained steady at 25s.